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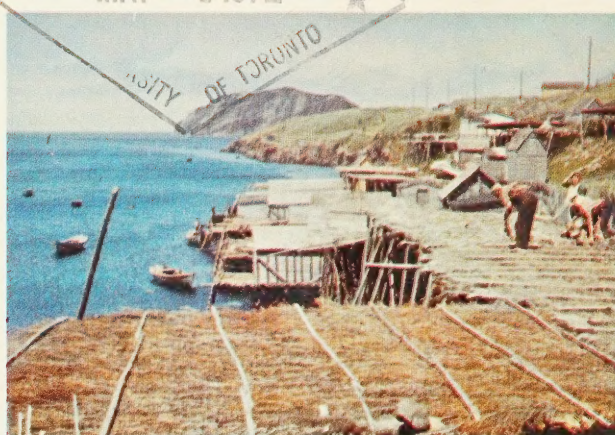
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DIMENSIONS OF CANADIAN REGIONALISM



D. Michael Ray

POLICY RESEARCH and COORDINATION BRANCH

Department of Energy, Mines and Resources
Ottawa, Canada



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Preface

This paper is concerned with one of the most characteristic features of Canadian geography in the present century: the social and economic disparities between the major regions of Canada. These differences are due to various causes: among others, the physical character of the country; differences in cultural origin of the immigrants; the timing of settlement; and proximity to heavily industrialized areas of the U.S.A.

In planning the sound management of Canadian resources, such regional variations are obviously of major importance and therefore the Department of Energy, Mines and Resources commissioned a quantitative study of Canadian regionalism by Dr. Ray to assist in such planning. His conclusions, based on the results of detailed factor and other analyses of the 1961 census, should also be of value to those concerned with the reduction or elimination of regional disparities.

Dr. Ray is continuing his work on behalf of the Department by performing similar analyses of earlier censuses in order to provide a historical perspective on the present situation.

J.W. MacNeill
Director
Policy Research and Coordination Branch

Préface

La présente étude traite de l'une des caractéristiques les plus marquantes de la géographie du Canada au cours du présent siècle: les disparités sociales et économiques entre les principales régions du pays. Ces différences sont dues à diverses causes, entre autres le caractère physique du pays, la variété des origines culturelles des immigrants, l'époque de colonisation et la proximité de régions fortement industrialisées des États-Unis.

De telles différences régionales présentent évidemment une grande importance pour la planification d'une saine gestion des ressources du Canada; c'est pourquoi le ministère de l'Énergie, des Mines et des Ressources a chargé M. Ray d'effectuer une étude quantitative du régionalisme canadien, à l'appui d'une telle planification. Ses conclusions, fondées sur les résultats d'analyses factorielles et autres du recensement de 1961, devraient aussi intéresser ceux qui cherchent à réduire ou à éliminer ces disparités régionales.

M. Ray poursuit ses travaux pour le compte du Ministère en procédant à une analyse semblable des recensements antérieurs, ce qui permettra de dresser un tableau historique de la situation actuelle.

J.W. MacNeill
Directeur de l'Étude des politiques
et de la coordination

Abstract

Three phenomena of pervasive concern to Canadians – economic disparities, foreign ownership and cultural differences – are explored by quantitative and cartographic examination of city and census county data for 1961 and broad policy implications are noted. Each of Canada's major regions: the Maritimes, Quebec, Ontario, the Prairies and British Columbia have distinctive cultural identity. Cultural diversity in Canada reflects the concentrations of minority ethnic groups in regions that are predominantly English as well as the cultural contrasts between English and French.

Economic development and regional disparities have independent regional patterns that cut across the cultural dimensions. Regional disparities reflect heartland-hinterland and urban-rural differences, and, to a lesser extent the regional impact of foreign ownership. Canada's heartland may be defined by the manufacturing belt which stretches from Windsor to Quebec City. Sheer distance from the heartland is a potent factor in regional development and should be taken into account in development programs. Urban growth has tended to be slower in the periphery than in the heartland, but it has been particularly slow in the Atlantic periphery. Metropolitan centres have a prominent role in the nation's economy, but no urban centre in the Atlantic Provinces ranks high in metropolitan status. Foreign ownership has increased regional disparities by the concentration of American subsidiaries in those parts of the Canadian heartland contiguous with the American manufacturing belt; but foreign ownership, economic development and cultural differences are independent dimensions of Canadian regionalism.

Résumé

Le présent mémoire traite de trois domaines d'intérêt qui préoccupent particulièrement les Canadiens: la disparité économique, la propriété étrangère et les dissemblances culturelles. L'auteur procède à l'analyse cartographique et quantitative des données de 1961 sur les villes et zones de recensement et signale les implications d'importance en matière de politiques. Chaque grande région du Canada, soit les Maritimes, le Québec, l'Ontario, les Prairies et la Colombie-Britannique, possède une identité culturelle propre; la diversité culturelle du Canada traduit la concentration des groupes ethniques minoritaires dans les secteurs à prédominance anglaise et fait ressortir le contraste culturel entre Anglophones et Francophones.

Le développement économique et la disparité entre les régions présentent des aspects régionaux indépendants qui ne se limitent pas aux dimensions culturelles. La disparité régionale reflète les différences entre les centres d'activité et l'arrière-pays, entre la ville et les campagnes et dans une certaine mesure les influences régionales de la propriété étrangère. Le centre d'activité du Canada peut être défini suivant une zone industrielle qui s'étend de Windsor à Québec. La distance entre chaque région et le secteur industriel a une grande incidence sur le développement régional et il faut en tenir compte dans les programmes d'expansion. En général, l'urbanisation est plus lente dans les régions périphériques que dans le centre d'activité; elle s'est révélée particulièrement lente dans les provinces de l'Atlantique. Les centres métropolitains jouent un rôle primordial dans l'économie nationale, mais les Maritimes ne comptent aucun centre métropolitain important. La propriété étrangère contribue à accentuer les disparités régionales parce qu'elle tend à concentrer les filiales américaines dans le secteur industriel canadien à proximité de celui des États-Unis. La propriété étrangère, l'expansion économique et la diversité culturelle sont toutefois des aspects distincts du régionalisme canadien.

Acknowledgments

National concern with such problems as cultural differences, regional disparities and foreign ownership has led in recent years to the establishment of a number of important federal commissions. The author has had the opportunity to prepare special tabulations on these problems while working for the Agricultural and Rural Development Administration and on the Regional Statistics staff of the Dominion Bureau of Statistics, as well as to undertake regional analysis for the Royal Commission on Bilingualism and Biculturalism and the Privy Council Task Force on the Structure of Industry. An important start was given to the work by research grants from the Canadian Council on Urban and Regional Research. This monograph draws heavily on the experience of these earlier efforts and owes much to the encouragement and assistance of Dr. Michael Oliver, Dr. Melville H. Watkins, James K. Mann, Dr. Simon A. Golberg, and Alan Armstrong.

The author owes an equal debt of gratitude to the Department of Energy, Mines and Resources, particularly W.A. Black, who coordinated the project, edited the text, and supervised the preparation of the maps for this report, and to Peter Reynolds and Dr. E. Roy Tinney, whose continuing support gave him the necessary incentive to develop and integrate the data to gain a comprehensive overview of the dimensions of Canadian regionalism.

The author also wishes to thank his university colleagues for their constructive criticism, and positive comments. They generally succeeded in restraining his more speculative interpretations of the statistical analysis and in keeping him on safe and solid ground. In particular the author would like to thank Professors Brian J.L. Berry, Robert A. Murdie, Morgan D. Thomas, Gerald J. Karaska, J. Lewis Robinson, T.N. Brewis, Larry S. Bourne, Eugene Smolenski, Edgar C. Conkling, and Nirmaladevi Cherukapalle.

Attention is drawn to the Population Ecumene, shown on many of the maps in the report, constructed from Plate 48, Density of Population — 1951 of the *Atlas of Canada*, produced by the Department of Energy, Mines and Resources. In addition, Figure 1 of the study is constructed from Map No. 2, Distribution of Population, 1961, in *Economic and social disadvantage in Canada*, published by Agricultural and Rural Development Administration, Department of Forestry, 1964. The census boundaries are taken from the 1:5,000,000 map, Index of Counties, Census Divisions and Subdivisions prepared by the Research Branch, Department of Agriculture and published by the Surveys and Mapping Branch. The map of Canada used in the study is based on Surveys and Mapping Branch Sheet, MCR 10. The cartography is primarily the work of the Cartographic Unit of the Policy Research and Coordination Branch.

D. Michael Ray
Department of Geography
State University of New York at Buffalo
Buffalo, N.Y.
June, 1969

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DIMENSIONS OF CANADIAN REGIONALISM

D. Michael Ray

Chapter I

Regional problems and regional dimensions

Three phenomena of pervasive concern in Canada — disparities in income and economic opportunity, the extent of foreign ownership, and cultural differences — display significant variations across the country that have important implications for regional policy and planning.¹ Disparities in income and economic opportunity are associated with inequalities in education, housing, public services and other amenities which together constitute our standard of living. Examination of per capita earned income by province since 1926, when regular data first became available, show little change in the level of regional disparities during the last forty years. In the 1960's, as in the 1920's, the per capita earned income has been substantially above the Canadian average in Ontario and British Columbia, and substantially below it in each of the Atlantic Provinces.²

Over the same period, 1926 to 1963, foreign ownership of manufacturing industry, of mining and smelting, and of the petroleum and natural gas industries has increased considerably. Canada is unique among the industrialized nations of the world in that more of these industrial sectors are owned and controlled by United States and other foreign residents than by Canadian residents. Foreign ownership poses serious problems of

concentration of production among a few giant multinational corporations with head offices concentrated in New York and Chicago.³ Foreign ownership affects regional development for the United States — controlled industry is heavily concentrated in Toronto and southwestern Ontario.⁴

Important interrelationships also exist between regional disparities, foreign ownership and cultural differences. Although Canada is a bilingual country, with one-third of its population since Confederation of French ethnic origin, English is the principal language in all provinces, even Quebec where the "firms which provide most employment and which most influence the course of economic development are owned and controlled by English-language interests."⁵ Hence, French mother tongue has come to be synonymous with bilingualism, and some anti-English-Canadian sentiment has developed among French-Canadians which contrasts with their pro-American feelings.⁶ The American economic investment in Quebec was considered no more foreign than the English-Canadian and had the advantage of establishing new industries utilizing Quebec natural resources rather than its cheap labour as previous English investment had done.⁷

Immigration has added substantially to cultural diversity in Canada. Sixteen per cent of Canada's population is foreign-born, which is three times more than the corresponding figure for the United States, for instance, and Canada has had one of the highest rates of net immigration of any country in the world in the 20th century. The location of immigrants, as well as the more numerous internal net migration in Canada, closely reflects the variation in economic opportunity across the country.⁸

Regional disparities, foreign ownership, and cultural differences have different spatial patterns but they are complexly interwoven to produce distinctive regionalisms across Canada. Regionalism is generally an asset to a country but one Canadian authority notes "it is unlikely that regionalism is anywhere at the centre of more national problems than in Canada."⁹ The centennial of Confederation witnessed numerous examinations of Canada's regional problems, but most authors have focused on particular aspects of these problems and few have attempted any broad overview.¹⁰ It is the purpose of this study to attempt such a synoptic overview of the spatial variations in economy and culture across Canada in 1961, by means of a quantitative analysis of a comprehensive set of characteristics for each city and census county, and to indicate the broad policy implications. A second study of census data for the period 1871 to 1951 is being undertaken. These synoptic national overviews, repeated systematically for a number of census years, should indicate the behaviour of both the characteristics and their interrelationships, and provide a detailed diagnosis of problems of regional development. These diagnoses can provide a useful guide to regional policy and planning.

The data

The results of the analysis are influenced by data selected and the definition of the observation units. It is appropriate to review these before discussing the results. The data analyzed are drawn largely from the 1961 Census of Canada and may be divided conveniently into three groups: economic variables, cultural variables, and spatial locators. The variables are listed in Appendix I, and summarized in Table 1. These variables were selected from larger sets after preliminary screening and analysis. Both city and county sets of data measure income, education and occupation, age structure of the population and cultural characteristics. The most important difference between the two sets of data is in the employment data. The city data measure employment structure by occupation enumerated at place of resi-

dence. The county data include sixteen variables measuring manufacturing employment at place of work by type of industry cross-tabulated by size of corporation and by country of establishment-control. The city employment data identify differences in economic function among Canadian cities; the county employment data explore the impact of foreign-ownership on regional development.

Table 1
City and county data

Type of variable	Number of variables analyzed	
	Cities	Counties
Economic variables	35	35
Family income	4	3
Median house value and rent	1	2
Education level	5	5
Employment structure	23	23
Employment level	2	2
Housing and physical stock	3	0
Demographic variables	11	11
General population characteristics	3	5
Age structure	6	6
Population growth	2	0
Cultural variables	32	21
Mother tongue	10	8
Religion	5	0
Place of birth	12	10
Immigration	5	3
Spatial locators	3	9
Totals — all variables	84	76

The observation units

City data were gathered for the 174 cities with a population of over 10,000 in 1961. All cities within the metropolitan areas defined by the Census of Canada were aggregated to their respective central cities reducing the number of observation units to 113. For example, it was decided to treat the cities on Montreal Island as a single Montreal metropolitan centre, rather than as separate centres. These aggregations for the metropolitan centres do not equal the aggregations published by the Census of Canada which include the urban population for cities below 10,000 population, and rural population living within the metropolitan areas. The procedure used in this study, for obtaining metropolitan area aggregates, was adopted for computational convenience but the differences with the census metropolitan aggregates are unlikely to affect the results of the statistical analyses. The cities are identified on the location map, Figure 1.

All the 229 census divisions, or census counties, are included in the county analysis and the census division boundaries are shown in Figure 2. Two important differences between the city and county data should be noted. The census county data cover the total population; cities are included in the totals for the census divisions in which they are located. The census counties are also more evenly distributed across the country; one-fifth of the city observations are within 100 miles of Toronto compared with a tenth of the county observations and the disparity in the heartland concentration continues to a distance of 400 miles from Toronto (Table 2). The relative concentration of cities in Central Canada and British Columbia is a feature of Canadian geography which is elaborated in the analysis.

Table 2
Distribution of observation units
by distance from Toronto

Observation units		Distance from Toronto in miles						
Category	Total	0-50	50-100	100-200	200-400	400-800	800-1600	1600 and greater
Cities	113	10	10	10	27	22	18	16
Counties	229	10	12	19	52	52	62	22

The analytics

Factor analysis and other multivariate analyses are used to examine the interrelationships among the many variables in this study, but the focus of the study is on the interpretation of the results and not on the methods. A brief review of the analytics is given for the interested reader unfamiliar with factor analysis.

Factor analysis is a descriptive rather than an explanatory tool.¹¹ It performs two basic tasks: (1) it groups all characteristics, or variables, with very similar geographic patterns into sets; (2) it provides a succinct profile of each city and county by calculating the score or rating of each observation unit on each set of variables.

Each set of variables is termed a factor or dimension, and the factors are ranked in the order of effectiveness with which they describe the variables. The effectiveness with which a factor describes the variables is measured by the amount of variation in the variables that it explains; this measure of explanatory power is termed an "eigenvalue". This ranking of the factors need not correspond with their order of importance because the ranks may be affected by the final selections and

deletions of variables, and because importance often depends on additional criteria. Indeed, all factors are often treated as equally important by regional analysts.

The grouping of a set of variables together as a single factor indicates that the variables are associated together and are independent of the other variables. For example, Quebec born, French mother tongue and Roman Catholic religion would, of course, group together on a single factor. The importance of the factor analysis in this study of regionalism in Canada is first, in showing how characteristics, whose distribution patterns are more complex or are unknown, group on the factors, and second, in making it possible to effectively summarize the information contained in the original data in a small set of maps, each map presenting the scores for the cities or counties on one factor.

The dimensions

The results of the factor analysis of the city and county data are similar and the dimensions which effectively summarize all the original characteristics may be grouped into four sets. These dimensions, listed in Table 3, provide a succinct structure on which to base the discussion which follows. The cultural dimensions of regionalism are the most prominent and when mapped identify Canada's five major regions: British Columbia, the Prairies, Ontario, Quebec, and the Atlantic Provinces. Centre-periphery factors bring into focus the socio-economic characteristics associated with distance from Canada's manufacturing heartland. The character of urban growth, urban functions, and their relationship with regional disparities is more complex than would be anticipated solely from a consideration of urban theory. Six factors are needed to describe these characteristics.

Although the manufacturing variables form separate factors, they are not closely associated with the other variables. Additional analysis has been undertaken to explain the influence of source of capital on industrial location, and of foreign investment on regional development. A relationship is evident between foreign investment and regional development but the factor analysis stresses the independence of the cultural, regional economic, and foreign investment patterns in Canada.

Factor analysis, by its nature, is divisive. The division of a set of characteristics into a number of factors or components is of no special importance in itself. What is important is the composition of the factors and the extent to which the cultural, socio-economic, and ownership characteristics are cleanly and sharply divided in the analysis. The composition of the factors is examined in the chapters which follow.

Table 3
Dimensions of Canadian regionalism: 1961

Factor	CITY ANALYSIS			COUNTY ANALYSIS		
	Rank	Eigen-value*	No. of variables most highly associated with factor**	Rank	Eigen-value	No. of variables most highly associated with factor
Culture and regionalism (Chapter II)						
English-French contrasts	1	12.47	18	3	7.64	9
Prairie-type city	2	8.47	12	—	—	—
Maritime-Prairie contrasts	—	—	—	2	10.04	15
B.C.-type city	5	6.54	10	—	—	—
Centre-periphery contrasts (Chapter III)						
Centre-periphery factor	8	4.89	7	6	4.70	6
Urban growth, urban functions and regional disparities (Chapter IV)						
Urban-rural contrasts	—	—	—	1	15.28	22
Post-1945 growth centres	4	6.91	11	—	—	—
Mining-service town contrasts	3	7.59	14	—	—	—
Primary manufacturing and special function centres	6	5.11	7	—	—	—
Ethno-metropolitan centres	7	4.99	5	4	6.46	8
Investment in manufacturing by country of capital origin (Chapter V)						
U.S.-controlled industry	—	—	—	5	4.96	8
U.S.-controlled paper and allied industry	—	—	—	7	3.24	2
Canadian-controlled paper and allied industry	—	—	—	8	2.70	3
U.K.-controlled paper and allied industry	—	—	—	9	2.64	3

*The highest eigenvalue in the present analysis is 15.28 for county urban-rural differences which is equivalent to stating that the factor has the explanatory power of 15.28 of the 76 variables in the county analysis, where each variable is considered to be of equal weight or importance. This is a high value, considering the diversity of characteristics included in the analysis. The main interpretative use of eigenvalues is to decide the number of important factors contained within a set of data. Generally an eigenvalue of 1.0 is used as the cut-off, but in this analysis, as many variables are very closely related, it was empirically found that an eigenvalue of 2.0 provided a more satisfactory cut-off.

**The variables are the specific census and other characteristics analyzed in this study. They are grouped by use of factor analysis into factors. The factors have, in turn, been grouped into four sets termed culture and regionalism, centre-periphery contrast, urban growth, and manufacturing. The importance of each factor is suggested by three related measures, (1) the eigenvalue, which is the explanatory power of the factor, (2) the rank of the factor, which is based on its eigenvalue, and (3) the number of variables most highly associated with the factor. The level of association ranges from 0.0 to ± 1.0 , indicating zero and perfect association respectively. Every variable has an association of $\pm .4$, or higher in these analyses.



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Chapter II

Culture and regionalism

The Royal Commission on Bilingualism and Biculturalism defines culture as:

A way of being, thinking and feeling. It is a driving force animating a significant group of individuals united by a common tongue, and sharing the same customs, habits and experiences.¹

There are no measures in this analysis which directly measure a way of being, thinking and feeling but the cultural diversity of Canada, and the associated centrifugal forces which tend to weaken national unity, are suggested by the diversity of inherited characteristics, principally place of birth, mother tongue and religion. The English-French cultural differences of Ontario and Quebec are easily identified in the factor-analysis results; but so too, is a Prairie-factor which contrasts particularly with Maritime characteristics, and a culturally-distinctive set of British Columbia cities. The influence of the principal cultures, concentrated in Canada's two heartland provinces, does extend across the nation, but the factor analysis substantiates the cultural distinctiveness of each one of Canada's five major regions.

English-French contrasts

The dominance of the two heartland cultures, English and French, remains unchallenged. In 1961, 44 per cent of Canada's population was of British ethnic origin and 30 per cent French ethnic origin.² The factor analysis picks out the well-known census characteristics that distinguish the two cultures (Table 4). Eighteen variables are highly associated with the English-French factor in the city analysis and nine in the county analysis. Ontario has had higher immigration rates than Quebec since World War II. Dutch mother tongue* and the United Kingdom immigration associate with the

English culture. The French culture has shown more cultural homogeneity in all factor analyses and no other mother tongues group with it, though it includes bilingualism as a distinctive characteristic. Recent population growth in Quebec has been slower than Ontario's as indicated by the relative importance of population growth 1921 to 1941 and the proportion of dwellings built in 1921 to 1945.

The contrasts between the two cultures are illustrated in Table 5 by data for the seven cities with the highest scores on this factor. Note that they tend to be smaller cities whose cultural homogeneity is undisturbed by heavy immigration: Toronto and Montreal, the two largest cities in Canada do not epitomize the English and the French city. The mean average value of the four selected characteristics for all Canadian cities sharply separates the two groups. For education (the only non-inherited variable associated with this factor), the French towns listed have a below-national average of their population with high school education, and the English towns have an above-national average. Nevertheless, differences in education levels in Canada display a number of systematic patterns, and only 22 per cent, as noted, of the variation in the proportion of the population with five years or less of primary education is explained by the English-French factor. Furthermore, income and occupational differences are not primarily associated with this cultural factor, but instead are explained by the heartland-hinterland and urban-rural factors.

The French and English cultures, mapped in Figures 3 and 4 show little spatial intermingling. French mother tongue is dominant in Quebec, and English mother tongue is dominant in every other province, exceeding 90 per cent in Newfoundland, Prince Edward Island and Nova Scotia and exceeding 75 per cent in British Columbia and Ontario (Table 6). The two cultures have opposite locations rather than independent distributions; hence their inverse association on a single cultural factor.

*Mother tongue is the language learned in childhood and still spoken.

Table 4
English-French contrasts

English-French contrasts					
City analysis variable	Communality: % of variance explained by eight factors	ENGLISH		FRENCH	
		Factor loading	Squared factor loading as %	Factor loading	Squared factor loading as %
% of population:					
with English mother tongue	94	+.941	89		
with Dutch mother tongue	54	+.516	27		
born in the United Kingdom	75	+.713	51		
born in Ontario	78	+.578	33		
of United Church	92	+.918	84		
of Baptist	52	+.633	40		
with one or two years of high school	66	+.708	50		
with two to five years of high school	86	+.645	42		
with French mother tongue	94			-.908	82
bilingual	61			-.700	49
born in Quebec	89			-.879	77
Roman Catholic	96			-.898	81
average family size	79			-.670	45
age 0-14	85			-.500	25
age 15-19	86			-.732	54
Population growth 1921-1941	53			-.554	31
dwellings built 1921-1945	78			-.488	24
% of population with five years or less of elementary education					
	81			-.466	22
County analysis variable	Communality: % of variance explained by nine factors	ENGLISH		FRENCH	
		Factor loading	Squared factor loading as %	Factor loading	Squared factor loading as %
% of population:					
with English mother tongue	93	+.899	81		
age 40-54 years	80	+.664	44		
age 55-64 years	84	+.666	44		
with one or two years of high school	67	+.643	41		
with French mother tongue	95			-.872	76
born in Quebec	88			-.856	73
age 0-14 years	81			-.599	36
age 15-29 years	76			-.722	52
average family size	90			-.730	53

Note: (1) Only variables with their highest loading on this factor are listed. Loadings have a maximum value of ± 1.0 . Association with English culture is indicated by a positive sign, French by a negative sign. The communality is measured as the sum of the squares of the factor loadings on all factors.

(2) The square of each loading may be thought of as the proportion of variation exhibited by the variable that is accounted for by the factor. For example, 89% (.941²) of the variation in the city proportion of English mother tongue population is accounted for by this factor (English-French contrasts), out of a total of 94% (the "communality") accounted for by all eight city factors. By contrast, only 22% (-.466²) of the variation in proportion of city population with five years or less of elementary education is accounted for by this factor, out of a total of 81%. That is, the other seven factors aggregatively account for 59% of the variation, although none individually exceed 22%.

This geographic separation can be traced to three causes: (1) the locational differences in initial colonization; (2) the tendency of English settlers to migrate from any area becoming predominantly French-Canadian; (3) the tendency for minority groups to be assimilated. Assimilation of all ethnic minority groups has been predominantly to the English language and whereas 10 per cent of Canada's French ethnic population has English mother tongue, only 1 per cent of Canada's English ethnic population has French mother tongue.³

Nevertheless, some areas in Canada do have important English and French minority populations. The Royal Commission on Bilingualism and Biculturalism lists six English-minority areas, five of which are in Quebec, including the Montreal area with the largest English minority population.⁴ Seven French-minority areas are listed, occurring in the provinces of Nova Scotia, New Brunswick, Ontario and Manitoba. Some of these minority areas are evident on the maps (Figures 3 and 4).

Table 5
Cities with high scores on English-French contrasts: city-factor one

	Pop. 1961	Factor score	% population with English mother tongue	% population with French mother tongue	Average family size	% population with 1-5 years of high school
The English-type city						
St. Thomas	22,469	1.68	93.1	0.4	3.9	58.1
Trenton	13,183	1.35	91.3	3.8	3.9	54.6
Woodstock	20,486	1.35	90.0	0.7	4.0	52.6
The French-type city						
Rimouski	17,739	-1.82	0.9	98.7	5.4	43.7
Rouyn	18,716	-1.82	4.9	90.4	5.1	31.3
Chicoutimi-Nord	11,229	-1.77	0.6	99.0	5.8	35.3
Alma	13,309	-1.71	0.7	98.8	5.3	34.3
Average for Canadian cities (unweighted by city size)			59.6	30.5	4.4	48.5

Table 6
Distribution of population by mother tongue: 1961

Province	Total population	% English	% French	% English or French	% German	% Ukrainian
Newfoundland	457,853	98.6	0.7	99.3	0.1	—
Prince Edward Island	104,629	91.3	7.6	98.9	0.1	0.1
Nova Scotia	737,007	92.3	5.4	97.7	0.2	0.1
New Brunswick	597,936	63.3	35.2	98.5	0.2	0.1
Quebec	5,259,211	13.3	81.2	94.5	0.6	0.3
Ontario	6,236,092	77.5	6.8	84.3	2.9	1.4
Manitoba	921,686	63.4	6.6	70.0	9.1	9.2
Saskatchewan	925,181	69.0	3.9	72.9	9.7	7.3
Alberta	1,331,944	72.2	3.2	75.4	7.3	6.3
British Columbia	1,629,082	80.9	1.6	82.5	4.4	1.2
Canada (exclusive of territories)	18,200,621	58.5	28.1	86.6	3.1	2.0

Maritime-Prairie contrasts

Considerable importance is attached by the analysis to minority ethnic groups in areas where a majority of the population is of English mother tongue. Canada's population has shown a remarkable increase in cultural heterogeneity in the hundred years since Confederation. "For every 100 Canadians, 15 of the 59 of British extraction present in 1881 had been replaced in 1961 by 3 Ukrainians, 2 Poles, 2 Italians, 2 Scandinavians, 1 Dutchman, 1 Jew and 4 people of various origins (Austrian, Hungarian, Yugoslavian, and so on), while the 30 French and the 6 Germans remained."⁵ Should the relative decline of population and of immigrants of British ethnic origin continue at these rates, persons of British ethnic origin would account for less than a third of the Canadian population by the end of the century.

No provinces show more cultural diversity than the Prairie Provinces, where more than a quarter of the population have a minority-group mother tongue, including almost a tenth with German mother tongue and almost another tenth with Ukrainian mother tongue. (Table 6). And no provinces show less cultural heterogeneity than the Atlantic Provinces where less than 3 per cent of the population have a mother tongue other than English or French. This important cultural contrast is given special prominence in the factor analysis and it emerges as factor two in both the city and county analyses.

Settlement of the Prairie Provinces was delayed by their geographic remoteness; Winnipeg, the gateway metropolis, is a thousand miles from Toronto and separated from it by the barrier of the Canadian Shield.⁶ Many of the early settlers preceded the railway which reached Winnipeg in the 1880's and provided a Prairie transportation net by the 1930's. Most of the migration occurred in the quarter-century from 1905 to 1930 making the Prairies "the focus of one of the greatest peacetime migrations in human history."⁷ The number of farms increased from about 55,000 to 288,000 between 1901 and 1931 and by 1936 the number of Prairie farms had reached its peak although both the improved and occupied areas have continued to increase.

There has been little immigration to the Prairies since the 1920's, and this, coupled with heavy out-migration in the 1930's and 40's, served to reduce the Prairie Provinces' proportion of the Canadian population from 23 per cent in 1931, its peak census year, to 17 per cent in 1961.⁸ The Prairies are the only region to show a percentage decline from 1931 to 1961 but their absolute population has continued to grow and the effective occupance of the Prairies constitutes Canada's second ecumene, larger in area though much smaller in population than the primary ecumene, Canada's manufacturing belt, which stretches across southern Ontario

and Quebec.⁹ The virtual completion of settlement of the Prairie ecumene by 1930 has meant little addition of foreign-born population to the Prairies in almost four decades. The result is a population which, despite a distinct and only partly blended culture, think of themselves as unhyphenated Canadians, unlike the English-Canadians and French-Canadians of the primary ecumene.

In contrast to the Prairies, immigration to the Maritime Provinces had almost ended by the time they joined Confederation between 1867 and 1873. The diverse cultural backgrounds of the settlers, including Acadians, whose first settlements date to the early 17th century, post-famine Irish, Highland Scots, and German-speaking Lunenburgers, may still affect their ways of being, thinking and feeling, but at the centennial of Confederation they are very homogenous compared to the Prairies.

The Maritime element of the Prairie-Maritime factor is weak. Only six variables, out of twenty-seven for the factor, are associated with it, and three of these are spatial locators (Table 5). No single factor describes any region completely; the profile of scores for the region on every factor is needed. Examination of the factor loadings makes it clear that this factor in particular, despite its title, provides only incidental description of the Maritimes and that its strength is in focusing on the importance of 20th century immigration to Canada, and the cultural diversity of the Prairie-type city (Tables 7 and 8).

The importance of foreign-born population to the Prairies is indicated in Table 7 by the association of the percentage of the population born in the United States, Germany and East Europe, and of immigration itself with the Prairies. The percentage of foreign-born population is higher in each of the eight cities with the highest score on this factor than the average for all Canadian cities (Table 8). The percentage of foreign-born who immigrated before 1931 is particularly associated with the Prairies in the county analysis and this variable shows a surprisingly east to west increase in value across Canada; the correlation with distance from Halifax is 0.878 (Figure 7 and Table 9). The increase in importance of immigration east-to-west across the country holds true equally well for Canada's sixteen metropolitan areas. The proportion of Montreal's foreign-born population almost exactly equals the national average of 15.6 (Table 22). Every metropolitan centre to the east has a much lower percentage of foreign-born population and every metropolitan centre to the west a higher percentage.

Migration theory, particularly the migration interaction model, would suggest that the relative contribution of immigration, predominantly from Europe, would diminish from east to west, as settlers occupied

the land most accessible to their ports of entry.¹⁰ Pre-Confederation settlement may have conformed with such a pattern, and the failure of the interaction model to account for present migration patterns is, in part, a failure to take into account the length of time required to settle a land mass stretching more than 3,000 miles from east to west across major physical barriers. Equally,

the failure of the model to apply suggests that the greater economic opportunities in western Canada in this century have more than compensated for the greater distances from the ports of entry. Conversely, the proximity of the Atlantic Provinces has not compensated for their lower opportunities in agriculture and industry.

Table 7
Maritime-Prairie contrasts

City analysis variable	MARITIMES			PRAIRIES	
	Communality: % of variance explained by eight factors	Factor loading	Squared factor loading as %	Factor loading	Squared factor loading as %
% of population:					
with East European mother tongue	70			-.733	54
with German mother tongue	59			-.712	51
Greek Orthodox	66			-.713	51
Lutheran	60			-.635	40
born in the Prairies	76			-.751	56
born in the United States	70			-.688	47
born in Germany	73			-.556	31
born in East Europe	77			-.782	61
immigrants	93			-.609	37
% of male labour force engaged in farming	63			-.558	31
% of immigrants who entered Canada 1941-1950	38	+.331	11		
distance from Vancouver	89	+.739	55		
County analysis variable	MARITIMES			PRAIRIES	
	Communality: % of variance explained by nine factors	Factor loading	Squared factor loading as %	Factor loading	Squared factor loading as %
% of population:					
with German mother tongue	38			-.607	37
with Ukrainian mother tongue	51			-.584	34
with Polish mother tongue	56			-.580	34
born in the Prairies	90			-.908	82
born in the United States	58			-.672	45
immigrants	92			-.646	42
% of immigrants who entered Canada before 1931	93			-.866	75
% of population that is rural farm	89			-.556	31
% of male labour force engaged in farming	92			-.672	45
distance from Toronto	93			-.681	46
distance from New York parallel to New York-Chicago axis	95			-.919	84
% of population born in Maritimes	49	+.431	19		
labourers as a % of male labour force	57	+.573	33		
distance from Toronto					
parallel to Toronto-Montreal axis	93	+.882	78		
perpendicular to Toronto-Montreal axis	96	+.918	84		

Note: Only variables with their highest loading on this factor are listed. The Maritime association is indicated by a positive sign; the Prairies by a negative sign. The Prairie-type city is therefore indicated on Figure 5 by very low scores.

Table 8
Cities with high scores on the Prairie-type city factor

The Prairie-type city	Pop. 1961	Factor score	% of pop. Greek Orth.	% of pop. Prairie born	% of pop. immigrants	% of male labour force farmers
Medicine Hat	24,484	-2.81	0.4	68.7	25.3	5.7
Swift Current	12,186	-2.28	0.7	76.3	17.1	7.1
North Battleford	11,230	-2.16	3.7	76.5	17.4	5.7
Winnipeg	398,636	-2.14	3.1	66.6	25.0	1.0
Edmonton	311,557	-2.10	5.1	67.2	23.8	1.2
Vernon	10,250	-1.92	3.6	23.2	27.0	1.7
Prince Albert	24,168	-1.84	3.7	78.5	15.1	3.4
Saskatoon	95,526	-1.83	2.6	73.5	18.0	2.7
Average for Canadian cities (unweighted by city size)			0.9	13.3	13.4	1.3

Note: All these cities are in the Prairies except Vernon which, like the other cities of the Okanagan Valley, shares the characteristics of the Prairie-type city. (Figures 5 and 6.)

Table 9
County correlation matrix for selected Prairie-factor variables

Variable number	Variable name	1	2	3	4	5
1	% population born in Prairies					
2	% foreign-born who immigrated before 1931	.792				
3	% foreign-born who immigrated 1940-1961	.024	.427			
4	% male labour force who are farmers	.659	.483	-.286		
5	Distance from Toronto	.659	.585	-.003	.247	
6	Distance from Halifax	.805	.878	.362	.429	.740

Note: Pre-1931 immigration was closely related to distance from Halifax. Post-World War II immigration has a different pattern.

The British Columbia-type city

British Columbia cities might have been expected to group with the Prairie cities in the factor analysis. Immigration has played an important role in the growth of both groups of cities, and in fact the only metropolitan areas with a higher percentage of their population foreign-born than the Prairie cities are Vancouver and Victoria, British Columbia, and Toronto and Hamilton, Ontario. Furthermore, remoteness from Canada's heartland and the lateness of settlement are as central in the cultural geography of British Columbia as of the Prairies.¹¹ Nevertheless, the cultural differences between the Prairies and British Columbia are very significant, and although no British Columbia factor emerges in the county analysis, a clear distinction is evident between the factor score profiles for the counties.

Vancouver is twice as far from Toronto as is Winnipeg; whereas, Winnipeg enjoyed its greatest growth relative to other western cities before World War I, Vancouver's sustained growth has occurred since World War I. The Prairie Provinces reached their highest proportion of the Canadian population in 1931, but British Columbia's population growth has exceeded the Prairies since the 1921-1931 intercensal period and its proportion of Canada's population is continuing to increase. The population growth of British Columbia relied much more heavily on migration from other parts of Canada than it did in the Prairies and although the inflow of foreign-born population into British Columbia gave Vancouver the second largest Chinese population in North America, as well as a significant proportion of Swedes, the province has less cultural heterogeneity than the Prairies (Table 10 and Figure 8).

Table 10
The British Columbia-type city

Variable	Communality: % of variance explained by eight factors	FACTOR LOADINGS	
		Association of of variable with factor	Squared factor loading as %
% of population:			
with Asian mother tongue	71	-.714	51
with Scandinavian mother tongue	49	-.545	30
born in British Columbia	72	-.799	64
born in Scandinavia	83	-.785	62
born in Asia	72	-.680	46
% of male labour force engaged as:			
fishermen	42	-.610	37
longshoremen	46	-.579	33
carpenters	45	-.529	28
loggers	38	-.506	26
distance from Toronto	89	-.747	56

Note: Only variables with their highest loading on this factor are indicated. All signs on this factor are negative.

Table 11
Cities with high scores on the British Columbia-type city factor

The British Columbia-type city	Population 1961	Factor score	% of population born in British Columbia	% of population Asian mother tongue	% of male labour force occupied as	
					fishermen	loggers
Prince Rupert	11,987	-5.27	51.5	2.2	9.84	1.84
Port Alberni	11,560	-4.36	48.4	2.2	1.05	5.37
Nanaimo	14,135	-2.85	54.6	1.6	2.66	4.31
Prince George	13,877	-2.10	47.3	1.3	0.00	2.41
Kamloops	10,076	-2.47	49.9	2.3	0.07	1.42
Vancouver	441,832	-2.72	39.7	3.6	0.78	0.81
Victoria	54,941	-2.26	38.7	3.6	0.39	0.46
Average for Canadian cities (unweighted by city size)			5.2	0.4	0.17	0.65

The link between immigration and regional economic opportunity tends to become more evident in the analysis the more recent the period of growth. No occupation-income characteristics are associated with the English-French factor. The Prairie-Maritime factor contrasts the proportions of farmers and labourers in the labour force. The British Columbia factor in the city analysis is describing almost as many economic as cultural characteristics including the percentage of fishermen, longshoremen, carpenters and loggers in the labour force (Tables 10 and 11). In the county analysis, this occupation structure is incorporated into a centre-periphery economic factor which contrasts occupation structure in Canada's heartland with that of the periphery.

Conclusion

The differences in the ethnic origin, the relative numbers, and the timing of immigration across Canada have created powerful dimensions of cultural variation. All the cultural factors underline the influence of accessibility to European settlers on the character of Canadian regionalism. European settlement of the Maritimes was completed before Confederation; whereas, the growth of British Columbia is largely post-World War I. Immigrants, as a percentage of the population, increase east to west across Canada and cultural heterogeneity is accordingly greater in western Canada than in eastern Canada. Each of Canada's five major regions, the Maritimes, Quebec, Ontario, the Prairies and British

Columbia have distinctive cultural identity. Cultural diversity in Canada reflects the concentrations of minority ethnic groups in regions that are predominantly English as well as the cultural contrasts between English and French. The major regions in Canada tend to be considered as having an economic as well as a cultural identity but economic differences are secondary in importance. The dimensions of economic development and regional disparities in Canada have a different set of regional patterns that cut across the cultural dimensions.

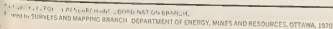


FIGURE 3



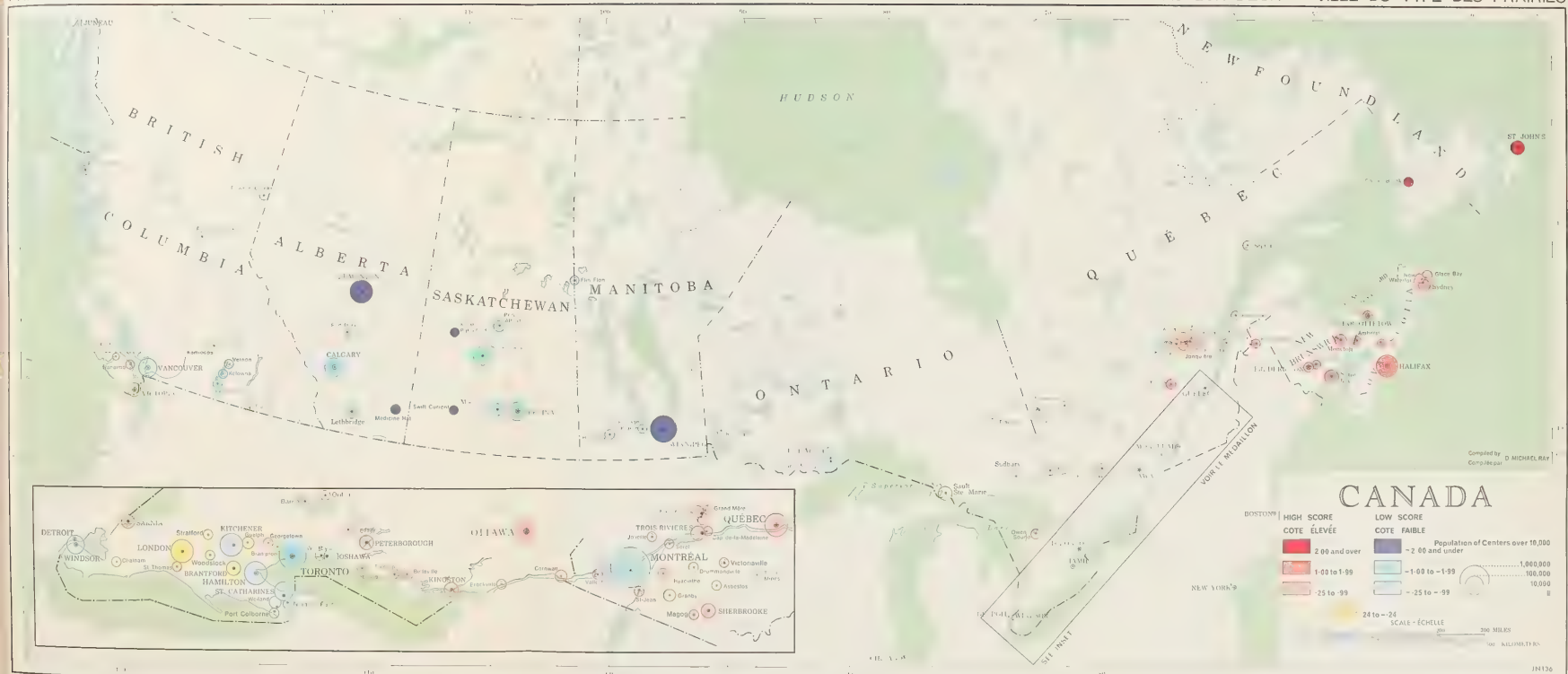
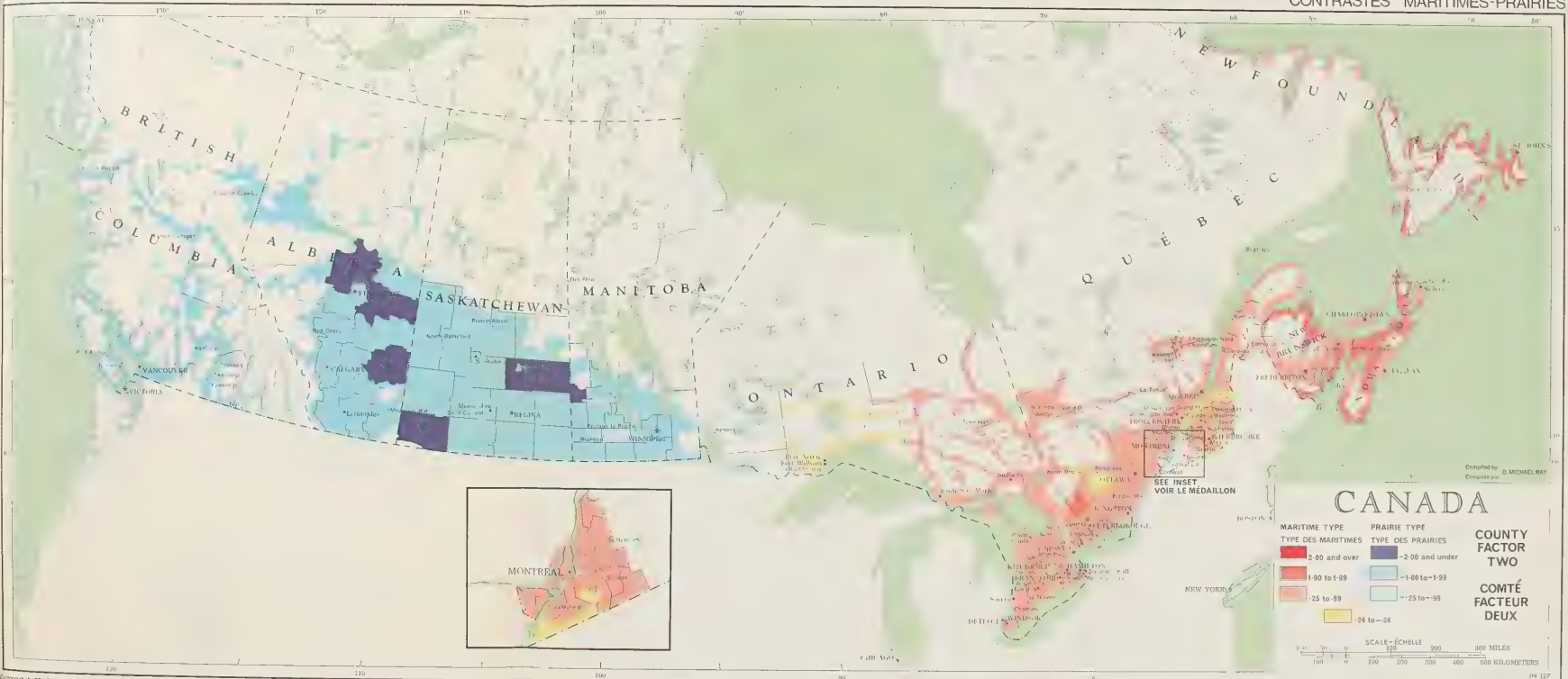


FIGURE 5

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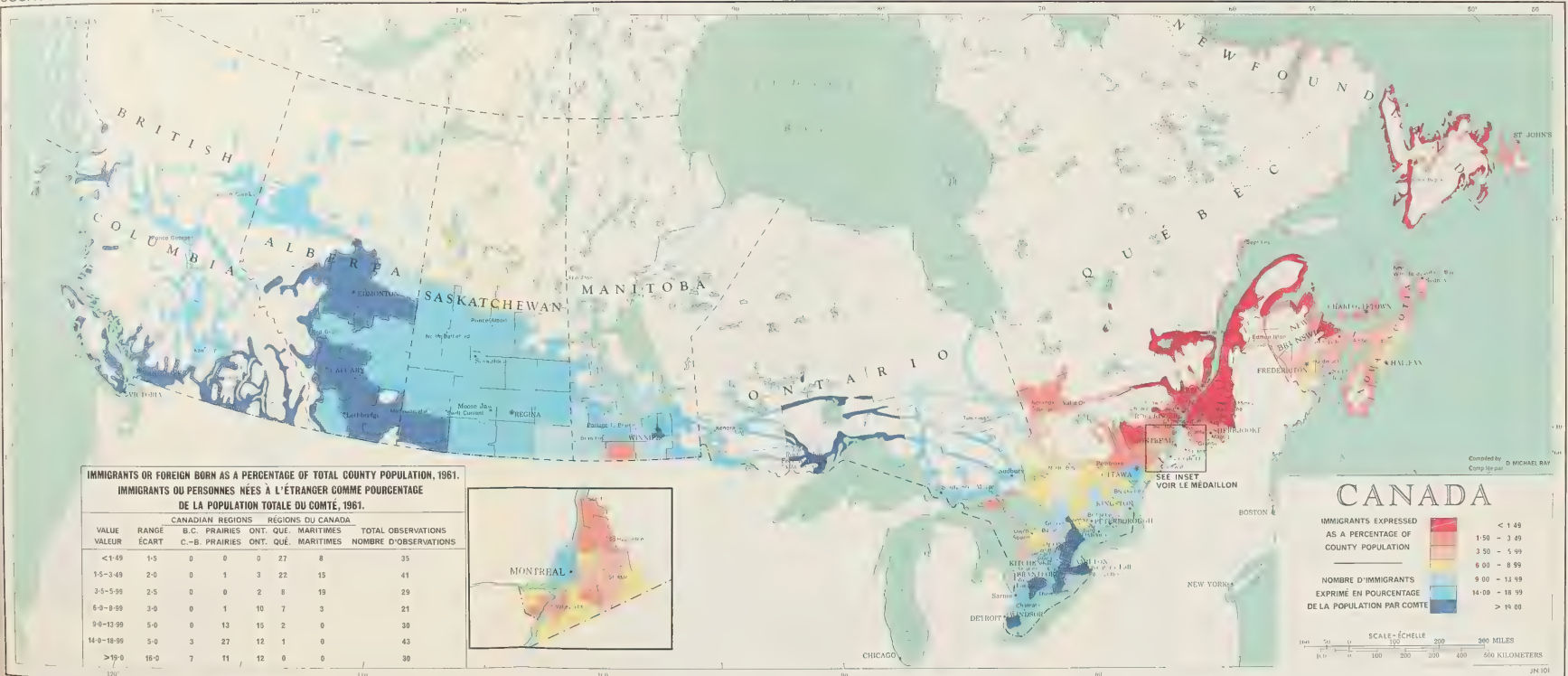


FIGURE 7



Chapter III

Centre-periphery contrasts

A federal government official has noted:

Canada, by any international standard of comparison, is a wealthy country... Unfortunately, and for many reasons, almost five million Canadians fail to win a share which is adequate to meet basic requirements for food, shelter, health and education. All of these people are poor by Canadian standards. Almost two million are poor by any standards.¹

Poverty in Canada has special significance because of its concentration in a few severely-depressed rural areas in the Atlantic Provinces and Prairies. This poverty expresses itself in the interprovincial structure of income.² The per capita personal incomes of the highest-income provinces have generally been twice as high as those of the lowest. Furthermore, there has been little change in the forty-year period for which data are available in the ranking of provinces on the income scale. Regional disparities, measured by personal income differences at the interprovincial level, are both significant and persistent.

The dimensions of economic variation and the associated problems of regional disparities reveal in Canada, as in other countries, three spatial patterns: a national heartland-hinterland pattern, an urban hierarchy pattern and an inter-metropolitan axis pattern. The lack of data in the analysis on inter-metropolitan flows of commodities and people hides the details of the inter-metropolitan axis pattern. Nevertheless, its essential character does emerge. The heartland-hinterland and the urban-hierarchy patterns are very prominent and emerge as pervasive elements in the geography of Canada.

Centre-periphery growth

Centre-periphery contrasts were the first pattern of the space-economy to be described by geographers; they are the most frequently recognized, and appear to occur at all geographic scales.³ A circular and cumulative causation process, leading to centre-periphery contrasts,

has been related to the staple-export theory of growth, in which exports depend on regional endowment and market accessibility.⁴ Continued and self-sustaining growth depends on a region attaining the threshold size for the internal production of a wide range of goods and services and achieving the associated economies of scale. The region with the greatest initial advantages and achieving sustained growth becomes the economic centre or heartland. Centripetal forces are set in motion and leadership in finance, education, research and planning are added to the initial advantages of this heartland.⁵ Secondary manufacturing and service activity gravitate toward the centre leaving hinterland areas reliant on primary industries which tend to play a diminishing role in national economies. Heartland-hinterland contrasts in regional development are sharpened by the concentration of corporation head offices and the lower interest rates for capital at the centre. The location of corporate control probably influences regional development; decisions made regarding production, sales and research may be strongly influenced by where the key decision-makers live.⁶ Likewise, the concentration of corporate offices at the centre of a national territory incurs a flow of corporate profits from the hinterland to the centre and creates an underlying shortage of capital in the hinterland.⁷

Centrifugal forces, which reduce heartland-hinterland contrasts, include: (1) the spread effects of growing markets and improving technology at the centre that can benefit localities in the hinterland; (2) the protection afforded hinterland industry by distance from the heartland; (3) the increasing congestion of the heartland combined with special amenities which parts of the hinterland have to offer.⁸ The centrifugal forces may be much weaker than the centripetal at the national and continental scales, however.⁹

The interprovincial differences in personal earned income in Canada may be regarded as the symptoms of the centripetal forces in economic growth. According to this interpretation, southern Ontario ranks as the pri-

mary centre with Vancouver and the Georgia Strait region acting as a secondary centre. The Prairies constitute the western periphery and the Atlantic Provinces the eastern periphery. The failure for interprovincial income differences to narrow are a symptom of the weakness of centrifugal forces. Interprovincial comparisons, however, ignore very important variations within the provinces.

Market potential and economic disparity

Substantial intraprovincial differences in retail sales are revealed by the map of market potential (Figure 9), which indicates aggregate accessibility to the national market.¹⁰ The highest market potential value to emerge in 1961 is for Toronto (index of 1000); one-third of all Canadian retail sales are made within a hundred miles of Toronto. The market potential indexes are also high for Montreal (932), Vancouver (458) and Winnipeg (245).¹¹ The map of market potential reveals a plateau of high values from Windsor eastward to Quebec City, and, separated from it by the Canadian Shield, a prairie area of moderate values. The Vancouver peak is isolated from the Prairies by the Western Cordillera where, as in the Atlantic Provinces, corridors of moderate market potential follow the communications and settlement network.

Market potential reflects population distribution as well as per capita retail sales. An index of economic disparity, in terms of retail sales per capita, is defined by subtracting the market potential value at each point from population potential and dividing the remainder by the average of the two potentials. The higher the index value, mapped in Figure 10, the greater is the disparity between population and retail sales. Toronto, which has the highest market potential, has the lowest economic disparity; in general, the heartland area of high market potential between Windsor and Toronto rates as very prosperous. There is a gradual increase in the economic disparity index northeastward along the St. Lawrence Valley and westward across the Prairies, underlining the low per capita retail sales in many parts of the Atlantic Provinces and in the Inter-Lake Region of Manitoba. These areas of severe economic disparity correspond closely with the "Special Rural Development Areas" designated by the Canada Agricultural and Rural Development Administration (ARDA) (Figure 10A).¹²

The indexes for market potential and economic disparity, calculated using 1931 retail sales and population data, are very similar to the 1961 values except for two noteworthy differences (Figure 11). Inter-regional disparities, measured at the county level have narrowed in the thirty-year period and may be less persistent than suggested by the provincial-average per

capita figures, which do not take adequate account of changes in rural areas. Furthermore, the pre-eminence of Toronto as Canada's market centre is a post-World War II phenomenon; in 1931 its market potential was second to that of Montreal.

The nature of centre-periphery contrasts

The nature of centre-periphery contrasts can be tested explicitly by examining the relationship between important economic characteristics, such as income and market potential, and distance from Toronto. A comprehensive examination of the nature of centre-periphery contrasts is provided by testing the extent to which variations in the county scores on the factors differ with distance from Toronto.

Many economic-status variables have a significant correlation with distance from Toronto. Average family-income levels decline with distance from Toronto ($r = -.355$); so does per cent of male labour force employed as craftsmen ($r = -.421$), market potential ($r = -.577$) and post-war immigration as a per cent of all foreign-born ($r = -.380$). Economic disparity increases significantly with distance from Toronto ($r = -.436$). These variations are fairly progressive with distance from Toronto.

The analysis of the factor scores grouped into classes according to distance from Toronto, shows that most of the county and half the city factors have significant variations according to distance from Toronto, although the analysis does not test whether these variations are progressive.¹³

The cultural factors in both analyses have highly significant intergroup differences, but these differences reflect the east-to-west gradient noted and the group averages do not change progressively from heartland to hinterland. Only three factors show a progressive change with distance from Toronto, the city centre-periphery factor 8, the county centre-periphery factor 6, and the county urban-rural factor 1. The averages of the factor scores for all these factors change at a critical 400-mile radius from Toronto from positive to negative. Within this 400-mile radius are located the Canadian heartland, the plateau of high market potential, half the cities with a population over 10,000 and three-quarters of the employment in manufacturing (Table 12).

The centre-periphery factors

The changes in economic status that occur with increasing distance from Toronto emerge as a centre-periphery factor in both the city and the county analysis (Table 13). The two factors do not have complete geographic identity, however; British Columbia is included in the county-analysis periphery but excluded

from the city-analysis periphery. The county analysis emphasizes the lumbering-fishing economy at the periphery, and, associated with it, a higher male-to-female ratio of the labour force, higher unemployment rates, and greater economic disparity. Some of the intercounty variation in age structure also exhibits a centre-periphery pattern with peripheral areas having a

relatively high proportion of population under 30 years, and a relatively low proportion of population 30 to 65 years.

The maps of the factor scores display the simple spatial character of this factor and particularly the contrast between the eastern and western peripheries and the centre (Figures 12 and 13). Note the high association

Table 12
The averages of the factor scores grouped by distance from Toronto

Distance band	1	2	3	4	5	6	7	
	0	50	100	200	400	800	1600	
Miles from Toronto	to	to	to	to	to	to	plus	F
	50	100	200	400	800	1600		Test
City analysis								
No. of cities	10	10	10	27	22	18	16	
Culture and regionalism								
1 English-French	0.93	0.97	0.79	-0.99	-0.49	0.19	0.45	20.17**
2 Prairie	0.22	0.17	0.33	0.17	0.76	-0.67	-0.76	7.27**
5 British Columbia	0.69	0.21	0.51	0.30	-0.02	0.03	-1.40	10.33**
Centre-periphery differences								
8 Centre-periphery	1.05	0.91	0.52	0.23	-0.42	-0.93	-0.32	11.55**
Urban growth, urban functions and regional disparities								
4 Growth centres	-0.64	0.09	-0.13	0.13	-0.25	0.46	0.03	1.71
3 Mining service	0.03	0.16	-0.27	0.21	-0.05	0.02	-0.25	0.52
6 Manufacturing	0.11	-0.50	0.49	-0.07	0.05	-0.35	0.39	1.68
7 Ethno-metro centres	0.60	-0.07	-0.04	0.23	-0.14	-0.22	-0.26	1.25
County analysis								
No. of counties	10	12	19	52	52	62	22	
Culture and regionalism								
3 English-French	0.91	1.02	0.82	-0.88	-0.34	0.37	0.16	23.60**
2 Maritime-Prairie	0.36	0.44	0.57	0.43	0.64	-0.69	-1.48	39.79**
Centre-periphery difference								
6 Centre-periphery	0.71	1.31	0.85	0.53	-0.32	-1.32	-1.37	31.92**
Urban growth, urban functions and regional disparities								
1 Urban-rural	1.30	0.43	0.36	0.24	-0.40	-0.59	-0.92	17.48**
4 Ethno-metro centres	1.15	-0.17	-0.21	0.13	-0.11	-0.02	-0.20	2.93**
Investment in manufacturing by country of capital origin								
5 U.S.-controlled industry	0.32	0.08	0.02	-0.11	-0.18	0.22	-0.29	1.48
7 U.S. pulp and paper	-0.01	-0.02	-0.11	0.18	0.09	-0.42	0.65	3.95**
8 Canadian pulp and paper	0.32	-0.10	-0.10	-0.10	0.02	-0.10	0.03	0.39
9 U.K. pulp and paper	-0.11	-0.12	0.05	-0.12	-0.06	0.36	-0.55	2.67*

Note: Factor scores are standardized to mean of 0.0 and variance of 1.0 for each factor. The original factor loadings for county factor 7 were all negative. Signs for loadings and scores for this factor have been reversed to make them directly comparable with other factors.

* Significant at the .05 level

** Significant at the .01 level

Table 13
Centre-periphery contrasts

City analysis variable	Communality: % variance explained by eight factors	CENTRE		PERIPHERY	
		Factor loading	Squared factor loading as %	Factor loading	Squared factor loading as %
% of male labour force engaged as:					
craftsmen	73	+.810	66		
machinists	67	+.697	49		
labourers	45	+.472	22		
paper operators	34	+.340	12		
% of population born in Ontario	77	+.522	27		
% of population with university education	60			-.431	19
% of male labour force engaged in services	63			-.491	24
% of population born in the Maritimes	68			-.551	30
% of population born in the Prairies	76			-.339	11

County analysis variable	Communality: % of variance explained by nine factors	CENTRE		PERIPHERY	
		Factor loading	Squared factor loading as %	Factor loading	Squared factor loading as %
Farmers as a % of the male labour force*	92	+.402	16		
% of population aged 40-54 years*	80	+.364	13		
% of population aged 55-64 years*	84	+.500	25		
% of population born in Ontario	65	+.498	25		
Loggers, fishermen, trappers and hunters as a % of male labour force	77			-.602	36
economic disparity index 1931*	75			-.212	4
economic disparity index 1961*	84			-.304	9
% of males, 15 years or older, seeking employment	73			-.588	35
male/female labour-force ratio*	43			-.337	11
% of population aged 0-14 years*	81			-.428	18
% of population born in Newfoundland	49			-.511	26
% of population born in British Columbia	59			-.494	24
perpendicular distance from New York-Chicago axis	90			-.660	44
distance from Toronto*	93			-.657	43

Note: Variables with their highest loading on the centre-periphery factor, and some county variables with their second highest loading on this factor are listed. Variables with higher loadings on other factors are indicated by an asterisk. Centre-associated loadings are positive; periphery-associated loadings are negative.

in the factor loadings between peripheral characteristics and perpendicular distance from the New York-Chicago axis (Table 13). This relationship implies that centre-periphery contrasts in Canada may be considered also as south-north contrasts and that the pattern of regional development in Canada is related to the proximity to the New York-Chicago development axis.

The cities with the highest factor scores on the

centre-periphery factor are listed in Table 14. Cities with high positive scores: Port Colborne, Oshawa, Sault Ste. Marie and Welland, have a high concentration of craftsmen and Ontario-born population. The four most peripheral cities: Oromocto, New Waterford, Fredericton and Halifax are in the Atlantic Provinces — the region with the lowest average family incomes in Canada and the greatest regional development problems.

Table 14
Cities with high factor scores on centre-periphery contrasts

	Population 1961	Factor score	% Maritime born	% Ontario born	% Craftsmen
Centre:					
Port Colborne	14,886	1.92	2.2	65.4	45.9
Oshawa	62,415	1.73	4.0	68.8	50.9
Sault Ste. Marie	43,088	1.63	1.7	69.8	41.4
Welland	36,079	1.61	2.2	62.2	49.0
Periphery:					
Oromocto	12,170	-4.28	58.8	16.1	1.3
New Waterford	10,592	-2.26	94.2	0.6	16.2
Fredericton	19,683	-2.11	85.5	3.2	19.5
Halifax	139,477	-1.98	82.1	5.5	20.9
Average for Canadian cities (unweighted by city size)			12.6	28.3	33.0

Conclusion

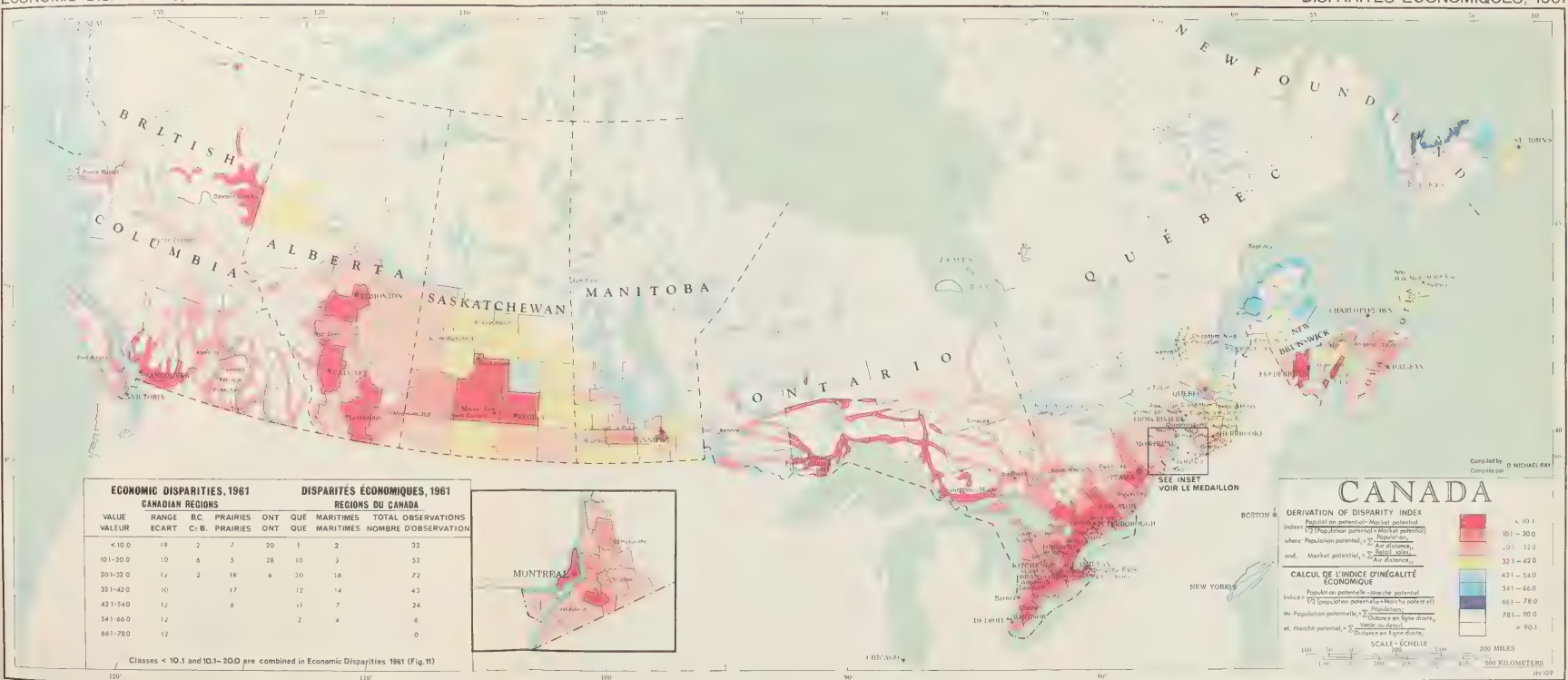
Significant centre-periphery contrasts in economic status, including income and employment levels, occupation structure and market potential, can be identified in Canada. Part of these contrasts can be attributed directly to sheer distance from the heartland, and centre-periphery factors occur in both the city and county analysis. The geographic definition of the periphery is not identical in the two analyses, and in the city analysis British Columbia separates from the western periphery to form a separate system of cities. It is noteworthy that all the areas designated under the

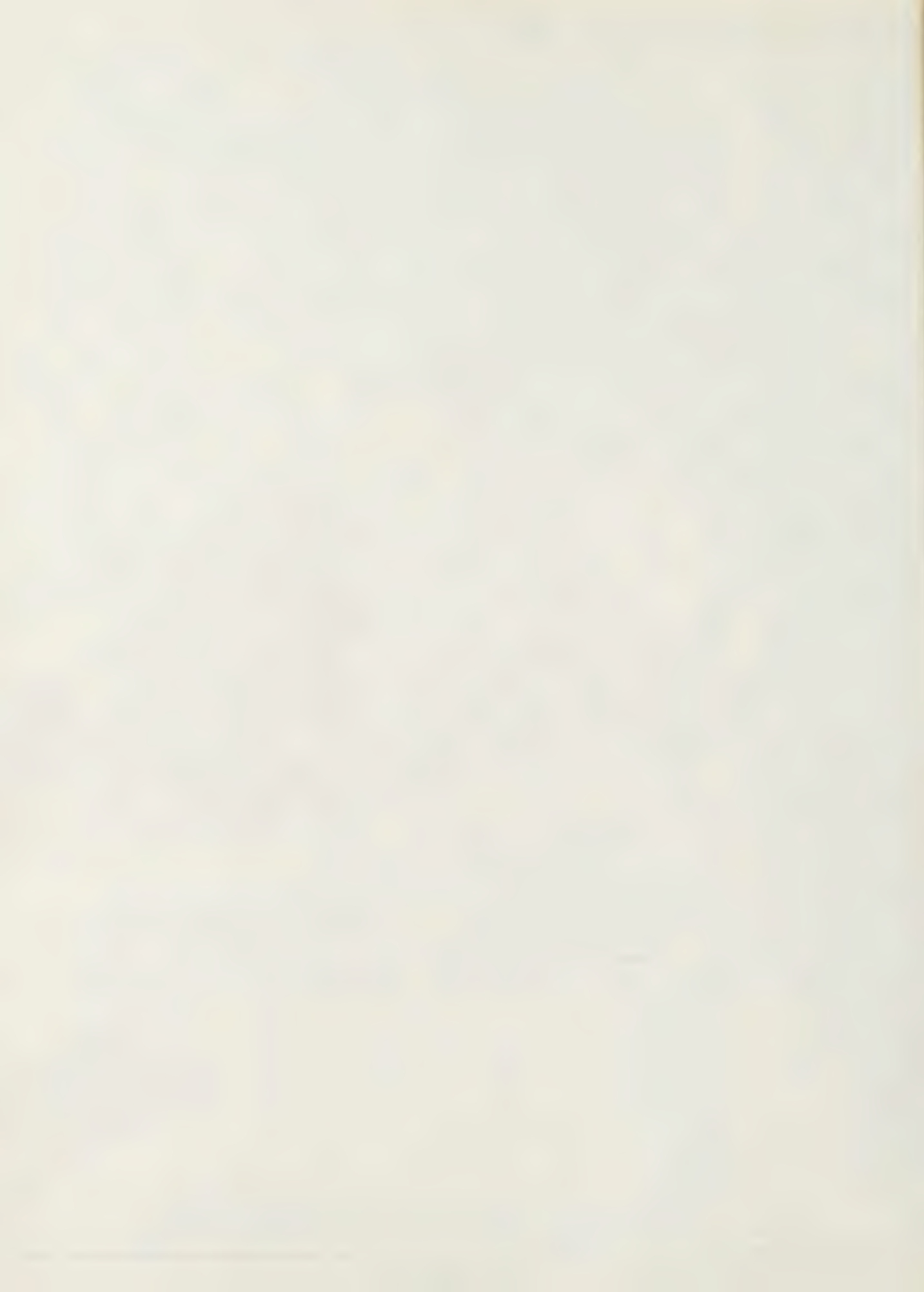
Funds for Rural Economic Development are in the most peripheral parts of Canada as defined by the city analysis.

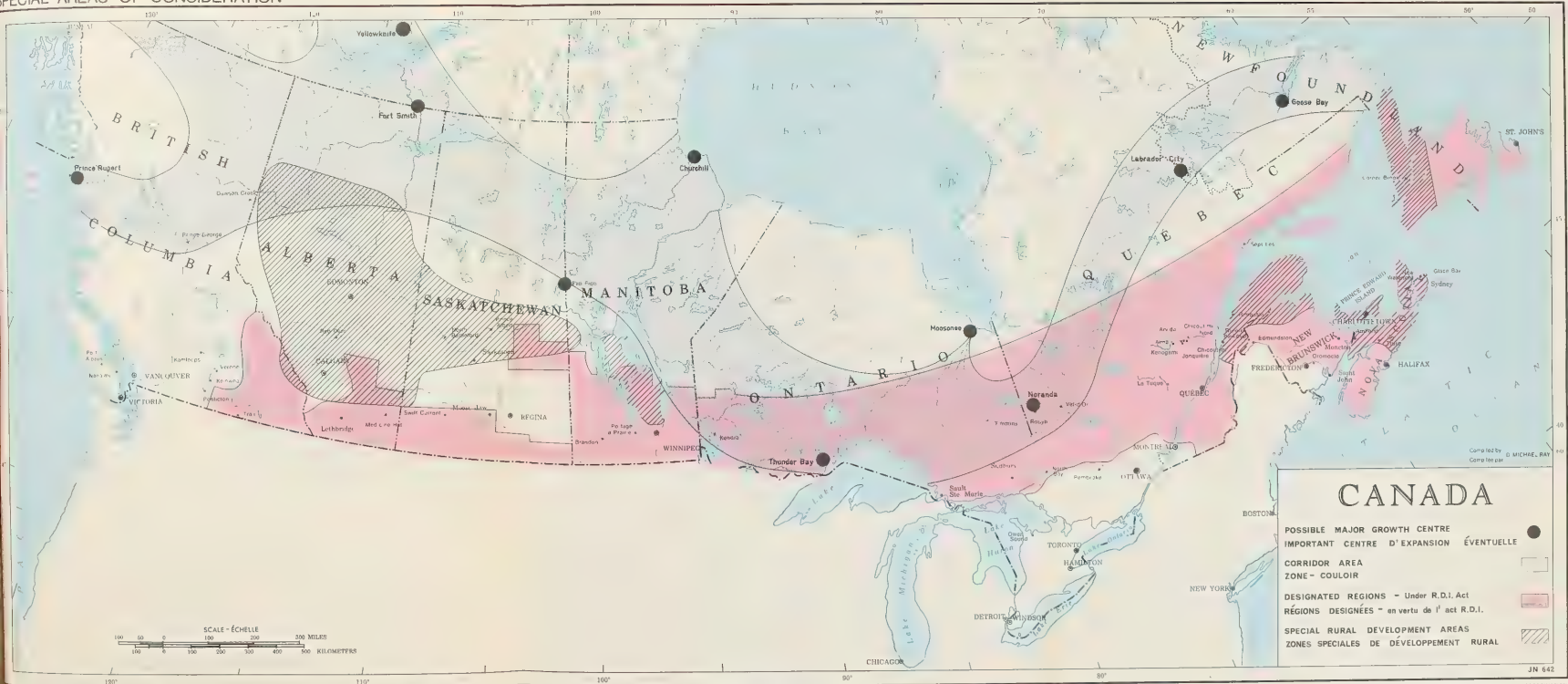
Several questions are raised about centre-periphery contrasts by this analysis. Centre-periphery contrasts may not be as persistent as is suggested by the provincial average income figures. The economic disparity indexes for 1931 and 1961 suggest that interregional disparities may have narrowed substantially. Furthermore, the greater part of the contrasts in economic status in Canada are attributable to urban-rural differences, and centre-periphery contrasts reflect in large measure inter-regional differences in urbanization.

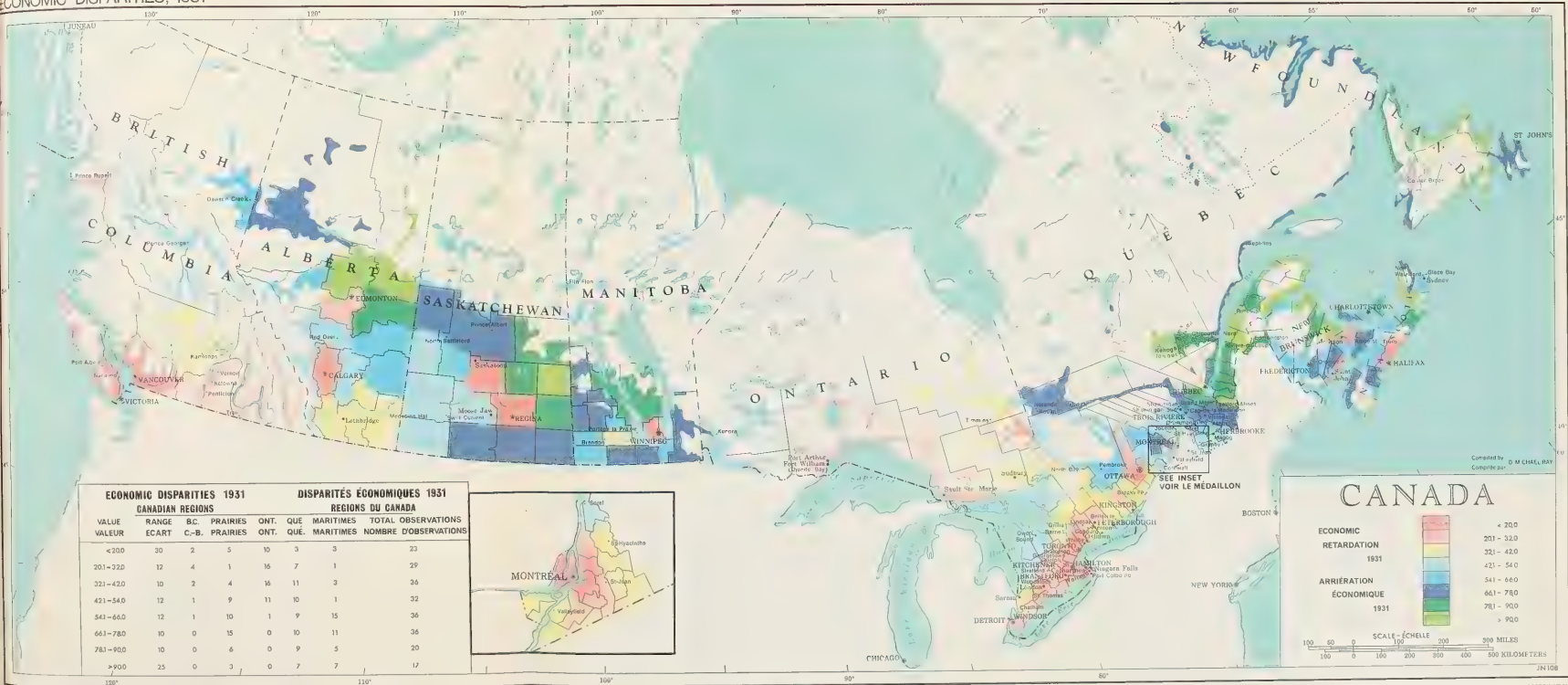


FIGURE 9











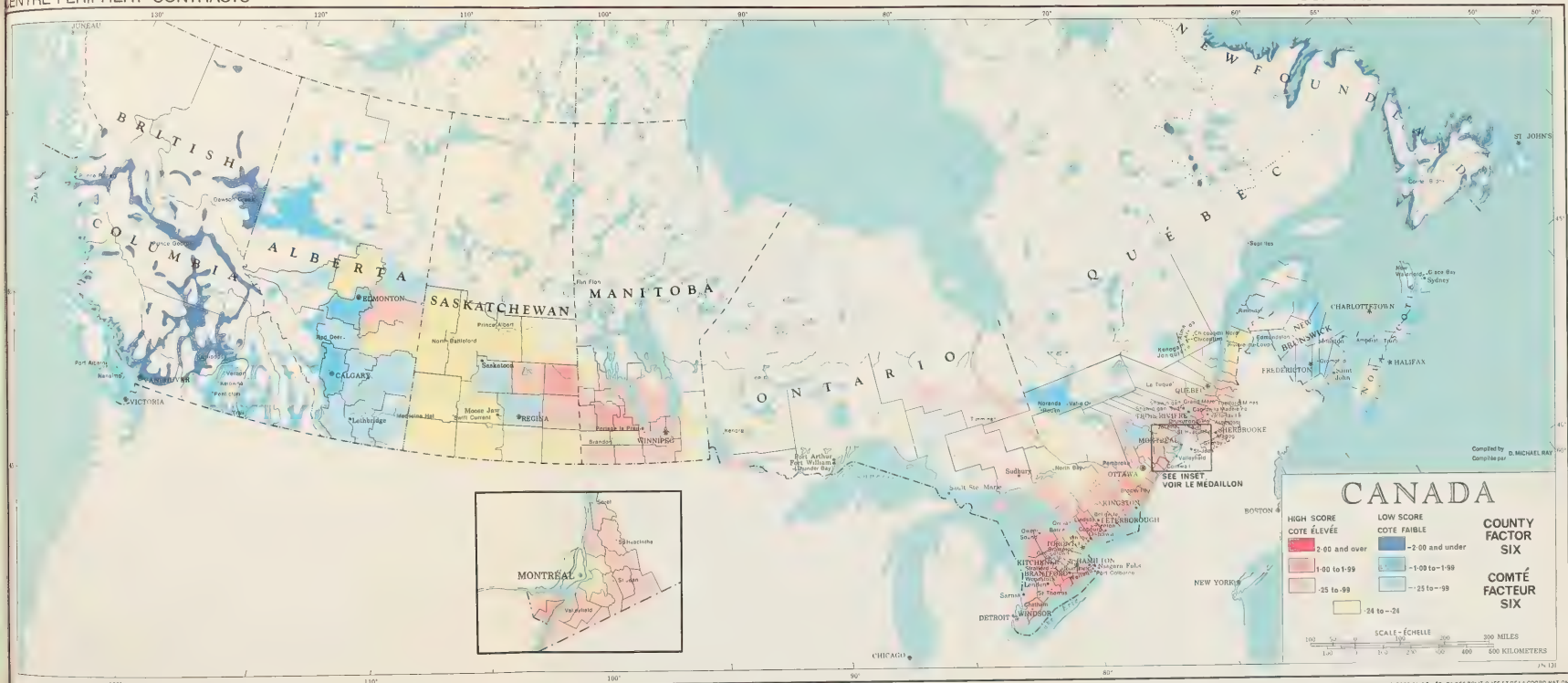


FIGURE 13

Chapter IV

Urban growth, urban functions and regional disparities

The Economic Council of Canada notes that:

Despite our huge land mass, almost three-quarters of the Canadian people now live and work in cities and towns occupying less than one-hundredth of our total area. Of the urban population, in turn, a further two-thirds have come to cluster in a relatively small number of larger cities and metropolitan areas.¹

Canada does not rank highest among the developed countries in degree of urbanization, but it may rank highest in rate of urbanization. Furthermore, metropolitan growth from 1951 to 1961 was double that of non-metropolitan growth, or 44.8 per cent compared to 20.3 per cent. By 1966, the combined population of Montreal, Toronto, and Vancouver had passed five million, a figure that exceeded one-quarter of the Canadian population. It is likely that by 1980 their population will pass eight million, or one-third of the projected Canadian population.^{2,3}

Metropolitan and urban growth are fundamentally more important than centre-periphery or heartland-hinterland contrasts. It is through the network of metropolitan and urban centres that the national heartland and hinterland are articulated as an integrated economy.

Large economic establishments — such as corporations and financial institutions — have tended to congregate in the metropolis, where policies are shaped and from which decisions are diffused through successively smaller cities to all corners of the country. In reverse, funds, materials and people move from the hinterland to regional cities and on to the metropolis.⁴

At the regional scale, therefore, national economies may be interpreted as comprising a pattern of metropolitan centres and intermetropolitan peripheries, with the socio-economic disparities between them similar to those found between the national heartland and hinterland.⁵ The metropolitan centres, together with smaller urban centres, comprise a system of cities arranged in a

hierarchy according to the functions performed by each. Urban theory suggests that the functions, the urban field, or area of urban influence, and the size of the cities are interrelated.⁶ Growth and innovation filter down from the metropolitan centres to the smaller centres, and outwards from the cities across their urban fields.

No simple relationships emerge in this analysis among the economic status, the growth-rates, the functions and the size of Canadian cities. Instead, these characteristics form independent dimensions. A sharp distinction does emerge in the county analysis between metropolitan centres and urban-rural differences and these factors together define a rural-urban hierarchy though they say little about functions. The city analysis does recognize functional-types of cities but none of these functions are strongly associated with growth rates.

Urban-rural growth

In general, urban counties have higher economic status and are growing faster than rural counties. Much of the intercounty variations in incomes and housing standards, in education levels and occupation structure and in immigration rates and age composition can be explained as urban-rural differences (Figure 14 and Table 15). But the differences in growth rates among Canadian cities are so prominent that a growth factor emerges in the city analysis which scales cities on their post-World War II growth performance. Fast-growth cities have a high proportion of new housing stock, a relative concentration of population in the 20- to 39-year age bracket and higher immigration rates (Table 16). Net-migration rates have played an important role in recent urban growth in Canada but neither growth nor net-migration rates appear to be related to any common set of characteristics.

Table 15
Urban-rural contrasts

County analysis variable	URBAN			RURAL	
	Community: % of variance explained by nine factors	Factor loading	Squared factor loading as %	Factor loading	Squared factor loading as %
% of families with incomes \$4000-\$6000	81	+823	68		
Average family income	93	+919	84		
Median value of housing	90	+855	73		
Average monthly gross rent	74	+731	53		
Economic disparity index 1931	75	+774	60		
Economic disparity index 1961	84	+789	62		
% of population not now attending school with:					
3 to 5 years of high school	80	+806	65		
1 or more years of university	80	+803	64		
% of male labour force in:		+			
professional and technical occupations	73	+792	63		
managerial occupations	64	+671	45		
craftsmen, production and related occupations	69	+579	34		
% of manufacturing employment in large U.S.					
ubiquitous-type industry	36	+428	18		
% of population 30-39 years of age	79	+809	65		
Dependency ratio	73	+685	47		
% of population born in the U.K.	79	+590	35		
% of population born in Germany	70	+543	29		
% of foreign-born who immigrated 1940-1961	80	+682	47		
% of families with incomes below \$4000	95			-.918	84
% of population not now attending school with:					
4 years or less of elementary education	84			-.671	45
elementary education only	90			-.747	56
Male/female labour force ratio	43			-.457	21
% of population rural	80			-.812	66

Note: Only variables with their highest loadings on this factor are listed. Urban associations are positive; rural are negative.

Since the 1891 census a steadily increasing proportion of Canadians have lived in cities over 30,000 and a decreasing proportion in cities under 5,000. But there is no simple relationship between city size and city growth. Cities with high scores on the post-war growth scale are not bigger than those with very low scales (Table 17).

Heartland-hinterland forces affect urban growth. The four cities with the lowest scores on the post-war growth factor are all in the Atlantic Provinces. New Waterford has the second lowest score on both this and the centre-periphery factor. The map also suggests some centre-periphery relationships (Figure 15). But there is no simple relationship between urban growth and distance from the heartland and the two factors are, by definition, absolutely independent.

The development of special functions has often spurred urban growth. Sept-Îles owes its lead on the growth factor to its function as the major shipping port

for the new iron ore development in the Labrador-Quebec area (Table 17). Oromocto, which ranks second, owes its growth to the Canadian Armed Forces base. But separate factors describe special functional types, including mining towns, and these too, by definition, are independent of the growth factor.

Urban functions

The mining- and service-town contrasts identified in the analysis are listed in Table 18. The mining towns have a high male-to-female ratio in the labour force and total population, and a striking distribution across Canada's resource frontier (Figure 16). Service towns tend to be larger, more evenly distributed and have a concentration of professional and transportation-related workers. Primary manufacturing and special function cities are identified by a concentration of scientific and technical workers (Figure 17 and Table 19).

Table 16
Post-war growth centres

City analysis variable	Communality: % of variance explained by eight factors	POST-WAR GROWTH		POST-WAR DECLINE	
		Factor loading	Squared factor loading as %	Factor loading	Squared factor loading as %
% labour force male	61	-.657	43		
% of dwellings built 1946-1959	79	-.708	50		
% of dwellings built 1959-1961	53	-.597	36		
% of population age 20-29	72	-.720	52		
% of population age 30-39	79	-.770	59		
Population growth 1941-1961	68	-.589	35		
% of immigrants who landed 1951-1961	82	-.757	57		
% of immigrants male	54	-.414	17		
% of population age 40-45	80			+.558	31
% of population age 55-64	90			+.591	35
% of immigrants who landed 1921-1940	59			+.509	26

Note: Only variables with their highest loadings on this factor are listed. Post-war growth associations are negative; post-war decline positive.

Table 17
Cities with high factor scores on post-1945 growth factor

	Population 1961	Factor score	% Immigration 1951-61	% Dwellings 1946-61	% Age 40-64	% Age 20-39
Post-1945 growth centres:						
Sept-Îles	14,196	-4.84	82.7	93.8	12.5	39.4
Oromocto	12,170	-4.03	45.8	96.7	7.6	38.4
Prince George	13,877	-1.89	50.0	76.0	19.9	32.3
Georgetown	10,298	-1.88	65.4	67.9	18.1	31.7
Post-1945 stable:						
Glace Bay	24,186	2.03	15.8	14.5	23.9	23.1
New Waterford	10,592	1.99	11.8	21.0	21.5	22.7
Amherst	10,788	1.89	26.9	14.1	26.4	22.4
Truro	12,421	1.48	24.9	24.9	26.6	24.2
Average for Canadian cities (unweighted by city size)			36.4	42.3	23.1	27.7

Comparisons with other studies using the same analytic techniques suggest that types of urban functions identified are rather unstable.⁷ This instability reflects: (1) the highly sporadic distribution of some of the occupation categories; (2) the number of occupation categories analyzed; and (3) the number of factors extracted in the different analyses. The classification yielded by this analysis is less important than the distinction that appears between function, growth and size.

Ethno-metropolitan centres

The measures of urban functions available for this study are particularly deficient in measuring metropolitanism. The most sensitive indicators of metropolitanism are omitted, including the flows of commodities, services and people among urban centres, business and service receipts and wholesale sales per capita, and the proportion of the labour force in such activities as finance, insurance, real estate and business services. Nor were any size variables used in the city analysis. Yet in

both analyses an ethno-metropolitan dimension appears which is identified as much from the cities it distinguishes as from the characteristics associated with it (Table 20).

The ranking of metropolitan centres on this factor broadly agrees with a tentative hierarchy of Canadian metropolitan centres developed by Leroy Stone.⁸ Toronto and Montreal are clearly at the top. Vancouver, Calgary, Winnipeg, and London are at the second level, though not necessarily equal to each other. Edmonton, Saint John and Windsor fall in the third group. Stone is unable to group the other metropolitan centres because of data problems. Averaging the factor scores for the cities in each level gives the values 4.44, 0.98 and 0.51 which represent a clear distinction between the three levels. It should be noted that the scores for all cities are

standardized so that their mean is zero and their standard deviation only 1.0.

Some cities, such as Niagara Falls and Sault Ste. Marie, score high on the ethno-metropolitan factor merely because of a high proportion of Italian population (Table 21 and Figure 18). The performance of the city factor in ranking metropolitan centres is perhaps not as satisfactory as that of the county factor which gives greater weight to the size factor (Figure 19). Nevertheless, the emphasis on the cultural aspects of metropolitanism in Canada is appropriate. About half the metropolitan growth 1951 to 1961 was accounted for by migration, much of it by foreign-born (Table 22). This heavy influx of foreign-born gives the metropolitan centres in Canada a distinctive cultural heterogeneity.

Table 18
The dimensions of urban functions

City analysis variable	FACTOR LOADINGS		
	Communality: % of variance explained by eight factors	Association of variable with function	Squared factor loading as %
Mining-centre characteristics (Factor 3):			
% of male labour force in mining	47	+548	30
% of families with \$4,000-\$6,000	58	+618	38
% of population male	87	+675	46
Male/female labour force ratio	66	+578	33
Service-centre characteristics (Factor 3):			
% of male labour force in indicated occupations:			
sales	77	-.809	65
managerial	77	-.701	49
law professionals	65	-.642	41
physicians and surgeons	49	-.567	32
professors and college principals	41	-.395	16
clerical occupations	67	-.609	37
road operators	61	-.566	32
transport and communication	40	-.549	30
railroad operators	14	-.202	40
Median value of owner-occupied homes	77	-.510	26
Primary manufacturing and special function characteristics (Factor 6):			
% of male labour force in indicated occupation:			
professional and technical	85	+805	65
professional engineers	74	+800	64
physical scientists	73	+782	61
% of population with degree	81	+724	52
% of families with \$0-\$4,000	86	-.549	30
% of families with \$6,000-\$10,000	87	+564	32
Average family income	67	+529	28

Note: Only variables with their highest loading on these factors are indicated. The service-centre characteristics have negative loadings on factor three. The socio-economic characteristics of Mining towns have positive signs.

Table 19
Cities with high scores on urban functions

(A)	Population 1961	Factor score	% Male population	MF/LF ratio*	% Miners	% Sales
The mining-type city:						
Flin Flon	11,104	2.86	52.6	3.6	27.4	2.9
New Waterford	10,592	2.77	50.6	4.0	54.6	2.8
Timmins	29,270	1.96	51.8	3.5	29.6	4.9
The service-type centre:						
Rivière-du-Loup	10,835	-1.88	47.5	2.0	0.1	9.6
Quebec	266,866	-1.62	47.6	2.0	0.1	8.8
Rimouski	17,739	-1.49	47.1	1.8	0.2	8.2
Swift Current	12,186	-1.21	49.9	2.3	0.6	9.8
Average for Canadian cities (unweighted by city size)			49.6	2.6	2.8	6.6

(B)	Population 1961	Factor score	% Prof-tech	% Engineers	% Scientists
Primary manufacturing and special functions:					
Arvida	14,460	5.57	20.6	6.54	2.46
Noranda	11,477	2.93	11.2	2.17	1.50
Sarnia	50,976	2.74	14.9	3.97	1.49
Ottawa	362,712	1.98	14.1	1.57	0.80
Flin Flon	11,104	1.90	7.5	1.06	1.18
Fredericton	19,683	1.77	15.2	2.37	0.29
Calgary	261,904	1.66	10.6	1.59	1.47
Trail	11,580	1.52	8.6	1.52	0.41
Average for Canadian cities (unweighted by city size)			8.3	0.97	0.26

* Male/female labour force ratio.

The intermetropolitan axis pattern

Metropolitan centres are linked by axes along which the rate of commodity flows, interaction and development tend to be proportional to the size of centres and inversely proportional to their distance apart.⁹ A political or physical boundary between two metropolitan centres will tend to reduce the level of interaction between them, although a penetration, or spatial momentum factor, which is proportional in strength to the distance of the centres from the boundary, appears to operate.¹⁰ A metropolitan centre located between two centres may reduce interaction between them by serving as an intervening opportunity, although this effect too may diminish as the distance between the two centres increases.

Very little data on interurban interaction exists, with the important exception of airline passenger traffic. The volume of passengers flying between pairs of Canadian cities is related to the size of the cities and their distance

apart.¹¹ Toronto is the major domestic-passenger node in Canada and passenger flows between Toronto and other large Canadian cities, particularly Vancouver and Winnipeg, are greater than predicted from their size and distance. The influence of intervening opportunities has not been tested but the data suggest that Toronto acts as an intervening opportunity between the western periphery and Montreal. For example, air passenger traffic between Vancouver and Montreal in 1964 numbered only 26,000 compared to 60,000 between Vancouver and Toronto. Physical barriers may actually increase air traffic by impeding surface transportation, thus there is a comparatively large volume of passengers between Halifax and St. John's across Cabot Strait, and between Vancouver and Victoria across the Strait of Georgia.

The air routes on which Canadian carriers transported over a hundred thousand passengers in 1964 were, in order of importance, Toronto-Montreal, Toronto-New York, Montreal-New York, and Toronto-Ottawa. The complete data on passenger traffic reveals

the importance of the Toronto-Montreal axis and its links with both the Canadian hinterland, particularly Vancouver and Winnipeg, and the United States heartland, particularly New York and Chicago.¹² It also provides an indication of the urban hierarchy and the way in which the metropolitan centres link the national heartland and periphery. The links of the heartland with

the Atlantic periphery are very weak compared to those with the western periphery according to this measure: only Halifax has an appreciable volume of air passenger traffic, and the combined volume of passengers to Montreal and Toronto from Halifax is much smaller than the combined volume from either Vancouver or Winnipeg.

Table 20
The ethno-metropolitan dimension

(A) City analysis variable	Communality: % of variance explained by eight factors	Association of variable with factor	Squared factor loading as %
Population density	56	+.689	47
No. of airflights per day	57	+.668	45
% of population:			
with Yiddish mother tongue	52	+624	39
Italian born	65	+589	37
with Italian mother tongue	62	+568	32

(B) County analysis variable	Communality: % of variance explained by nine factors	Association of variable with factor	Squared factor loading as %
Total population	93	+912	83
Manufacturing employment	92	+933	87
Market potential, 1961	94	+884	78
Market potential, 1931	96	+916	84
Population density	77	+851	72
% of population with Yiddish mother tongue	74	+836	70
% of population with Italian mother tongue	66	+474	22
% of population born in Italy	65	+456	21

Note: Only variables with their highest loading on the ethno-metropolitan factors are listed.

Table 21
Cities with high scores on the ethno-metropolitan factor

Ethno-metropolitan centres	Population 1961	Factor score	Population density	Air flights	% Yiddish mother tongue	% Italian mother tongue
Toronto	1,780,992	5.43	17,102.9	498	1.44	9.3
Montreal	1,907,910	3.45	8,085.7	516	1.72	4.4
Winnipeg	398,636	2.31	6,107.4	140	2.19	1.0
Niagara Falls	22,351	2.16	8,011.1	0	0.13	15.8
Windsor	132,456	1.61	7,805.3	52	0.53	5.6
Ottawa	362,712	1.47	6,719.3	144	0.36	1.8
Sault Ste. Marie	43,088	1.45	5,559.7	11	0.10	13.5
Timmins	29,270	1.42	8,315.3	6	0.23	5.3
Vancouver	441,832	1.28	8,253.9	188	0.326	2.3
Average for Canadian cities (unweighted by city size)			4,002.8	20.0	0.15	1.6

Regional disparities

Metropolitan and urban centres, which provide the ties between heartland and hinterland, themselves portray some broad centre-periphery differences. The principle differences are in occupation structure although the degree of urbanization also has been greater in the heartland than in the eastern periphery. In 1966, for example, the proportion of population living in cities over 100,000 was only 14 per cent for the Atlantic Provinces compared with the national figure of 48 per cent. Urbanization is proceeding rapidly in the Prairies; 43 per cent of the Prairie population lived in large cities in 1966, which was not far behind the 52 per cent for Quebec, 53 for British Columbia and 55 for Ontario.¹³

"The question must be asked if the persistence of generally lower levels of income in the Atlantic region is not directly related to the continued dispersal of population and to the relatively low concentration of economic activity in stronger urban growth centres."¹⁴ The factor analysis provides evidence of such a relationship and the slow rate of urbanization in the Atlantic Provinces is probably much more important in explaining the region's low income than the centre-periphery forces. County unemployment and income levels have been related to urban-rural differences, and to distance from Toronto and Halifax using multiple regression analysis (Table 23).

The results suggest that almost all the intercounty differences in income are explained by urban-rural differences. No east-to-west gradient appears in unemployment levels but this gradient is very marked in the case of income for which it explains twice as much of the intercounty variation as distance from Toronto. The regression analysis does not explain why the intercounty differences in urbanization should exist and the factor analysis fails to identify any common set of characteristics associated with it. Much more research on urbanization in Canada is needed before the regional patterns can be explained but the direct relationship

between urbanization and regional growth and regional disparities demonstrates the need to make urbanization a focus of national policy and planning.

Table 22
The percentage of foreign-born population
in metropolitan areas: 1961

Metropolitan area	Population 1961	Foreign-born % of total population
Atlantic Provinces		
St. John's, Newfoundland	90,836	2.5
Halifax, Nova Scotia	183,946	7.0
Saint John, New Brunswick	95,563	5.6
Quebec		
Montreal	2,109,509	15.2
Quebec	357,568	2.1
Ontario		
Hamilton	395,189	28.0
Kitchener	154,864	20.4
London	181,283	21.1
Sudbury	110,694	16.1
Toronto	1,824,481	33.3
Windsor	193,365	23.1
Prairie Provinces		
Winnipeg, Manitoba	475,989	23.7
Calgary, Alberta	279,062	24.7
Edmonton, Alberta	337,568	23.4
British Columbia		
Vancouver	750,165	28.7
Victoria	154,152	29.1

Source: Yoshiko Kasahara, "A Profile of Canada's Metropolitan Centres", *Queen's Quarterly*, Vol. 70 (1963), p. 311. The figure for Ottawa could not be calculated as the metropolitan area extends across the Ontario-Quebec boundary.

Table 23
Multiple regression analysis of spatial patterns of economic status

Dependent variable: economic-status measure to be explained	Per cent of variation explained by				Total explained variance (R ²)
	1 % population on farms	2 % population rural	3 Distance from Toronto	4 Distance from Halifax	
Unemployment	18.42	27.59	1.28	—	47.29
Income	—	46.18	3.96	8.64	58.79

Note: The definitions of the dependent variables are: Unemployment: all males looking for work as a % of males 15 years or older. Income: average family income.

The four independent variables were the only ones considered in the above analysis. A dash indicates that the contribution to explained variance was too small to be statistically significant.

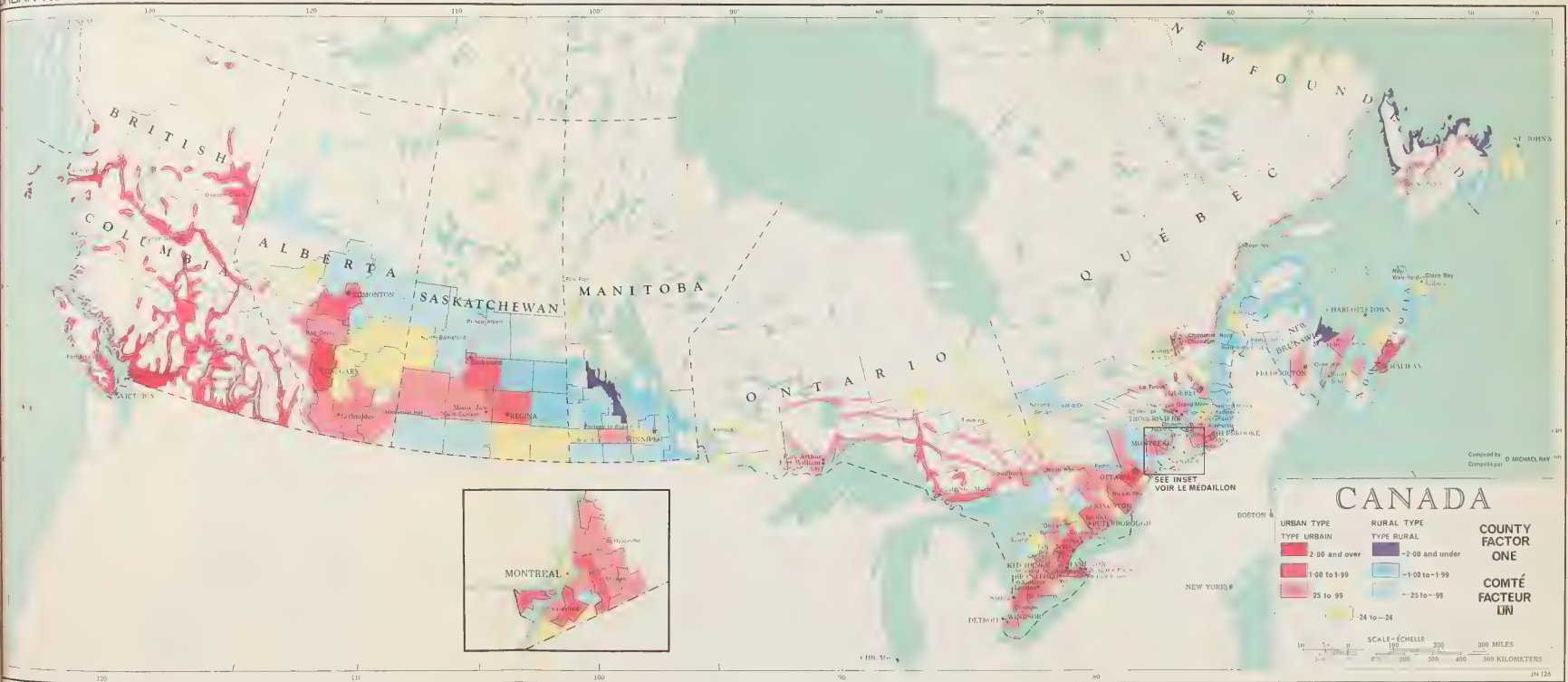
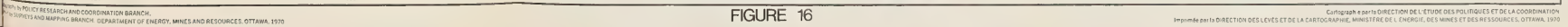


FIGURE 14



FIGURE 15



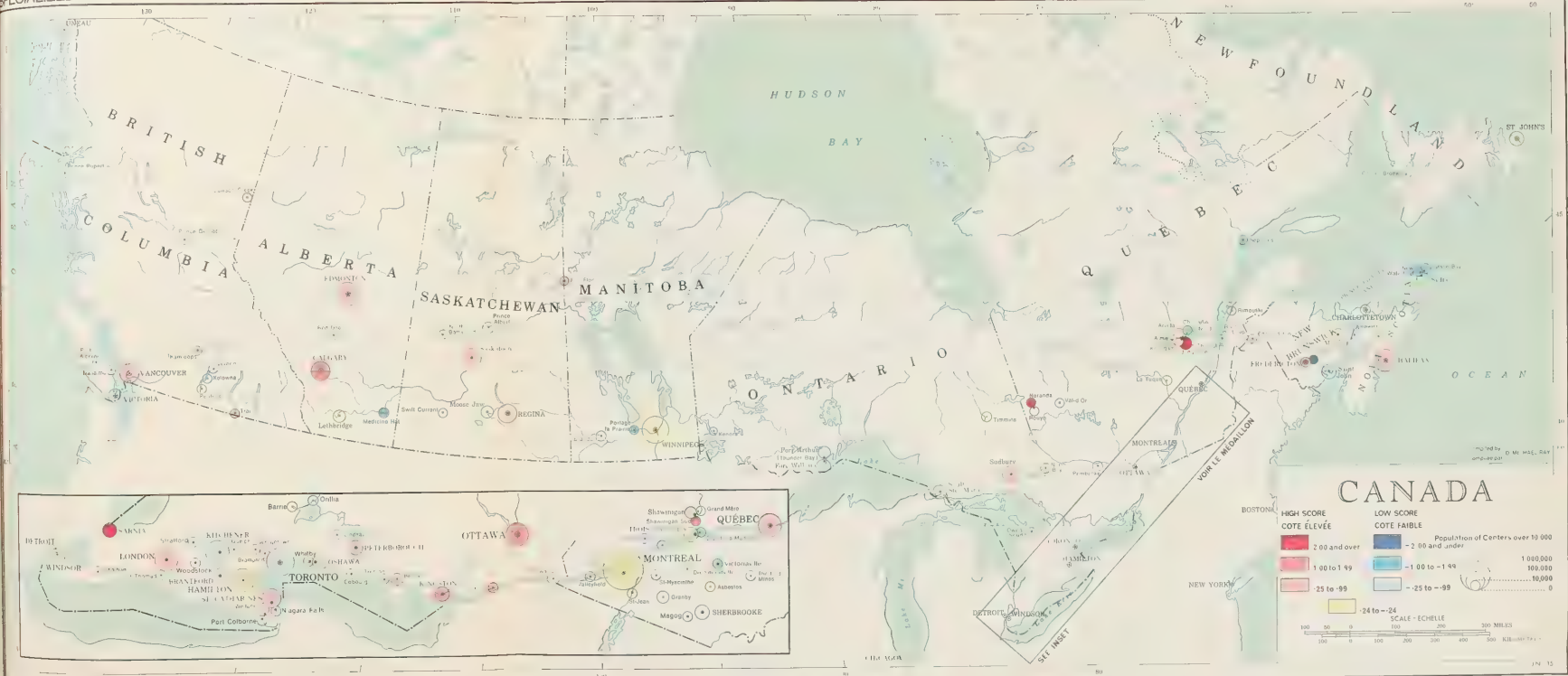


FIGURE 17



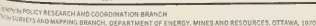


FIGURE 19

Chapter V

Foreign investment in manufacturing activity

The Watkins Report notes that:

The extent of foreign control of Canadian industry is unique among the industrialized nations of the world. Canadians are aware of the economic benefits which have resulted from foreign investment. They are also concerned about the implications of the present level of foreign control for Canada's long-run prospects for national independence and economic growth.¹

United States residents control more of the manufacturing, petroleum and natural gas, and other mining and smelting industries than do Canadian residents and the United States has more capital invested in Canada than in any other foreign country. By 1963, 46 per cent of manufacturing industry in Canada was controlled by residents of the United States compared to 40 per cent by Canadian residents. The remaining 14 per cent was controlled by residents of other countries, principally the United Kingdom. These figures represent a substantial increase in foreign control since 1926, the first year for which official data are available, when 65 per cent of manufacturing industry was controlled by Canadian residents.

Substantial foreign investment poses potential conflicts between two of the most important institutions of the contemporary world — the multinational corporation and the nation-state. About 60 per cent of foreign long-term investment in Canada is direct investment which constitutes a "package" of product, technology, management and market access, as well as capital. The vehicle for direct investment is the establishment of foreign subsidiaries by multinational corporations. The subsidiary attempting to implement any decisions must deal with the management of the parent company instead of with a multitude of relatively powerless shareholders. If the parent company insists that the subsidiary operate according to the methods, and even the laws, of the parent's home country the political and legal foundations of the subsidiary's host-state are weakened. The most frequent problems of extra-territoriality in Canada have concerned the United States

laws on freedom to export, the U.S. antitrust law and policy, and the U.S. balance of payments policy. Other problems of foreign direct investment that have been studied include its impact on the Canadian capital market, on the size-structure of industrial corporations and on the Canadian balance of payments.² Much less attention has been paid to the impact of foreign investment on regional development and on regional disparities.³

This study is restricted to an examination of foreign investment in manufacturing industry on regional development. The relative concentration of United States-controlled industry in southwestern Ontario is documented, and it is shown that differences in the location of Canadian- and American-controlled manufacturing employment are not simply a consequence of the differences in industry-type in which foreign capital is invested. Succeeding chapters explain the distribution of the United States subsidiaries in terms of the economic-shadow concept and attempt an assessment of the regional impact of foreign investment.

The regional concentration of manufacturing employment by country of control

Manufacturing employment in Canada stood at one and a quarter million in 1961, which equalled 19 per cent of the total labour force. Over one million of the manufacturing employees were in Ontario and Quebec which had 63 per cent of the total population of Canada, but 81 per cent of the workers in manufacturing (Figure 20). This concentration of manufacturing employment constitutes a manufacturing belt stretching from Windsor to Quebec City. The manufacturing belt comprises three manufacturing districts — the Niagara Frontier District which includes Toronto, the Windsor Border District, and the Middle St. Lawrence District which is centred on Montreal.⁴ Both the Niagara Frontier, and the Windsor Border District extend across

the international boundary into the United States. Only the Middle St. Lawrence District, located almost entirely in the Province of Quebec, has no extension into the United States. It should be noted that the Great Lakes area and its St. Lawrence extension will continue to form the main axis of the region containing the greatest concentration of people and industry in both Canada and the United States.

United States-controlled establishments and employment make a much greater contribution to the two contiguous manufacturing districts than to the Middle St. Lawrence District. Of the 1,618 United States-controlled subsidiaries in Canada, 1,132 are in the Toronto-southwestern Ontario region.⁵ The only cities outside these two contiguous manufacturing districts with large concentrations of United States-controlled subsidiaries are Montreal with 187, Vancouver with 50 and Winnipeg with 25 (Appendix II). The dot maps, Figures 21 and 22, which indicate the location of Canadian- and United States-controlled employment,

illustrate the concentration of American-controlled employment in the two areas closest to the United States manufacturing belt.

The concentration of United States-controlled employment in the Niagara Frontier and the Windsor Border manufacturing districts contributes to the contrasts in level of manufacturing activity between Ontario and the Western and Atlantic Provinces. These contrasts are illustrated in Figure 23 by graphing the percentage of Canadian- and United States-controlled manufacturing employment in each 100-mile distance-band from Toronto. Forty-five per cent of the American-controlled employment is within 100 miles of Toronto, compared to 31 per cent of the Canadian-controlled employment. Higher proportions of the total American-controlled employment than of Canadian-controlled employment are found in each of the first 300-mile distance-bands but this relationship is sharply reversed in the fourth distance-band which includes Montreal. Nevertheless, 83 per cent of the American-controlled employment is

Table 24
Dimensions of manufacturing

County analysis variable	FACTOR LOADINGS		
	Communality: % of variance explained by nine factors	Association of variable with factor	Squared factor loading as %
Factor 5 – United States-controlled manufacturing:			
% of county manufacturing employment			
all establishments	.634	+.582	34
all establishments of large corporations	.789	+.689	47
primary industry	.713	+.690	48
primary industry establishments of large corporations	.842	+.699	49
metal industry	.789	+.864	75
metal industry establishments of large corporations	.776	+.854	73
% of county male labour force employed as miners	.307	+.492	24
% of county population Indian or Eskimo	.528	+.640	41
Factor 7 – United States-controlled paper and allied industries:			
% of county manufacturing employment:			
paper industry	.753	-.831	69
paper industry establishments of large corporations	.848	-.891	79
Factor 8 – Canadian-controlled paper and allied industries:			
% of county manufacturing employment:			
all establishments	.632	+.768	59
primary industry	.718	+.840	71
paper industry	.659	+.796	63
Factor 9 – United Kingdom-controlled paper and allied industries:			
% of county manufacturing employment:			
all establishments	.508	+.681	46
primary industry	.850	+.905	82
paper industry	.790	+.878	77

Note: The data are tabulated from the 1961 Dominion Bureau of Statistics Joint Foreign-Owned Capital Project (see Appendix III). Large corporations are those with a book value of over \$25 million. The industries are defined in the *Standard Industrial Classification Manual* (Ottawa: DBS, 1960). Primary industries include these SIC categories: 101, 103, 105, 107, 111, 112, 123, 124, 133, 147, 151, 251, 271, 295, 341, 351, 357, 372, and 373. Only those variables with their highest loading on these factors are listed.

within 400 miles of Toronto compared with 70 per cent of Canadian-controlled employment.

The regional impact of the differences in the United States-controlled and the Canadian-controlled employment is not as great as the percentage data may suggest. Although residents of the United States control 40 per cent of the manufacturing industry in Canada, these subsidiaries employ only 23 per cent of the manufacturing employment and only about 4 per cent of the total labour force, illustrating the concentration of control in capital-intensive rather than labour-intensive industry.

Table 25
The county-factor sequence

Sequence No.	Name of factor	Origin	Eigenvalue at:-	
			First entry	Step 9
1	Urban-rural	original	18.2	15.3
2	Maritime-Prairie	original	12.8	10.0
3	U.S.-controlled inds.	original	7.2	5.0
4	English-French	2	10.3	7.6
5	Ethno-metropolitan centres	1	10.1	6.4
6	Centre-periphery contrasts	2,1	5.3	2.6
7	Canadian-controlled paper ind.	4	2.8	2.7
8	U.K.-controlled paper ind.	6	4.8	4.7
9	U.S.-controlled paper ind.	3	3.2	3.2

Note: The table interprets the origin of the factors from the varimax factor loadings for each solution from the 2-factor to the 9-factor solution. The factor loadings indicate the association between each variable with each factor. The eigenvalues are the sums of the squared factor loadings, and are a measure of the extent to which the factors account for the spatial variations being considered. The extraction of additional factors increases the proportion of the variation among the original variables that is explained, although it generally reduces the eigenvalues of the original factors.

Source of capital and the paper and allied industries

American investment is concentrated in the manufacture of rubber products, transportation equipment and electrical products, and it is very low in the leather goods, knitting mills, clothing, wood, furniture and printing industries.⁶ Some differences in the distribution of American- and Canadian-controlled manufacturing employment may be related to industry-specific location factors, but the factor analysis strongly suggests that source of capital is more important than type of industry or capital size of corporation in explaining regional differences in employment distributions. The industry variables group by country of control and not by the type of industry (Table 24 and Figures 24, 25, 26, and 27).

The importance of source of capital as a determinant in industrial location is particularly obvious in the case

of the paper and allied industries. Three paper industry factors emerge distinguished by country of establishment-control. It is possible to determine the "pedigree" of these factors from the detailed computer output which gives the varimax factor solutions for the data from the two-factor solution to the final nine-factor solution. Each solution represents the best description of the socio-economic character of Canada given the number of factors used. The sequence in which the factors are extracted is given in Table 25. At no step does a paper-industry factor, embracing more than one country of establishment-control, appear. The United States-controlled paper factor separates from the United States-controlled industry. The United Kingdom-controlled paper industry separates from the centre-periphery factor, where its Atlantic Provinces concentration gave it a periphery association. The Canadian-controlled paper industry separates from the English-French factor, where it had an English association. The three paper-industry distributions are thus quite distinct.

Table 26
The spatial distribution of employment
in the machinery industries,
SIC group 14

Independent variables	Regression coefficients and order of entry		
	Country of establishment control		
	Canada	United States	United Kingdom
Market potential	(1).00003**	—	(2).00001
% of Farm population	—	(3)−.064**	—
Distance from Toronto	(2).024*	(1)−.228**	—
Distance from Halifax	—	—	(1)−.019*
Distance from New York (parallel to the New York-Chicago axis)	—	(2)−.0001**	—
Multiple correlation coefficient (<i>R</i>)	.40	.30	.16
Per cent of total variance explained (<i>R</i> ²)	.16	.09	.03

Note: Based on stepwise regression analysis of employment data for 229 census counties. The order of entry is indicated by figure in parentheses. Only independent variables that entered the analyses are listed. The independent variables that did not enter were % population rural farm, the *X* and *Y* values for a coordinate system based on the Toronto-Montreal axis, and the *X* value for the New York-Chicago axis. Logarithms are used to transform all variables. A dash indicates that the variable did not enter for the indicated country of control. The regression coefficients for the Toronto, Halifax and New York variables are measures of the distance decay exponents. An asterisk indicates that the coefficient is statistically significant at the .05 level. A double asterisk indicates that the coefficient is statistically significant at the .01 level.

Source of capital and the machinery industries

Further evidence of locational differences according to country of control is provided by the machinery industries group, which, of the industry groups with substantial United States- and Canadian-control, has the highest centre-periphery contrast. The locational contrasts for this industry group according to country of control are indicated in Table 26. Of the three countries of control distinguished — Canada, the United States, and the United Kingdom — only the United Kingdom-controlled employment does not show a significant decline with distance from Toronto. But the decline for the United States-controlled employment from Toronto is almost ten times higher than for the Canadian-controlled employment, as shown by the regression coefficients. By contrast, the United Kingdom-controlled employment, is the only one to show a significant decline with distance from Halifax, and this decline is the only statistically-significant relationship which it has with the selected independent variables.

The elements of the spatial patterns for the three employment distributions also have a different order of importance. The most important element is market potential for the Canadian-controlled, distance from Toronto for the United States-controlled, and distance from Halifax for the United Kingdom-controlled. The second most important element is distance from Toronto for the Canadian-controlled, the coordinate distance from New York for the United States-controlled, and market potential for the United Kingdom-controlled. The proportion of the intercounty variation in employment explained by these few simple elements is very small, but very significant.

These results support the evidence of the factor analysis that differences in the location of manufacturing employment are not merely a reflection of the different industry groups in which United States capital is concentrated. Instead, these differences represent the influence of external location factors on the location of United States subsidiaries.

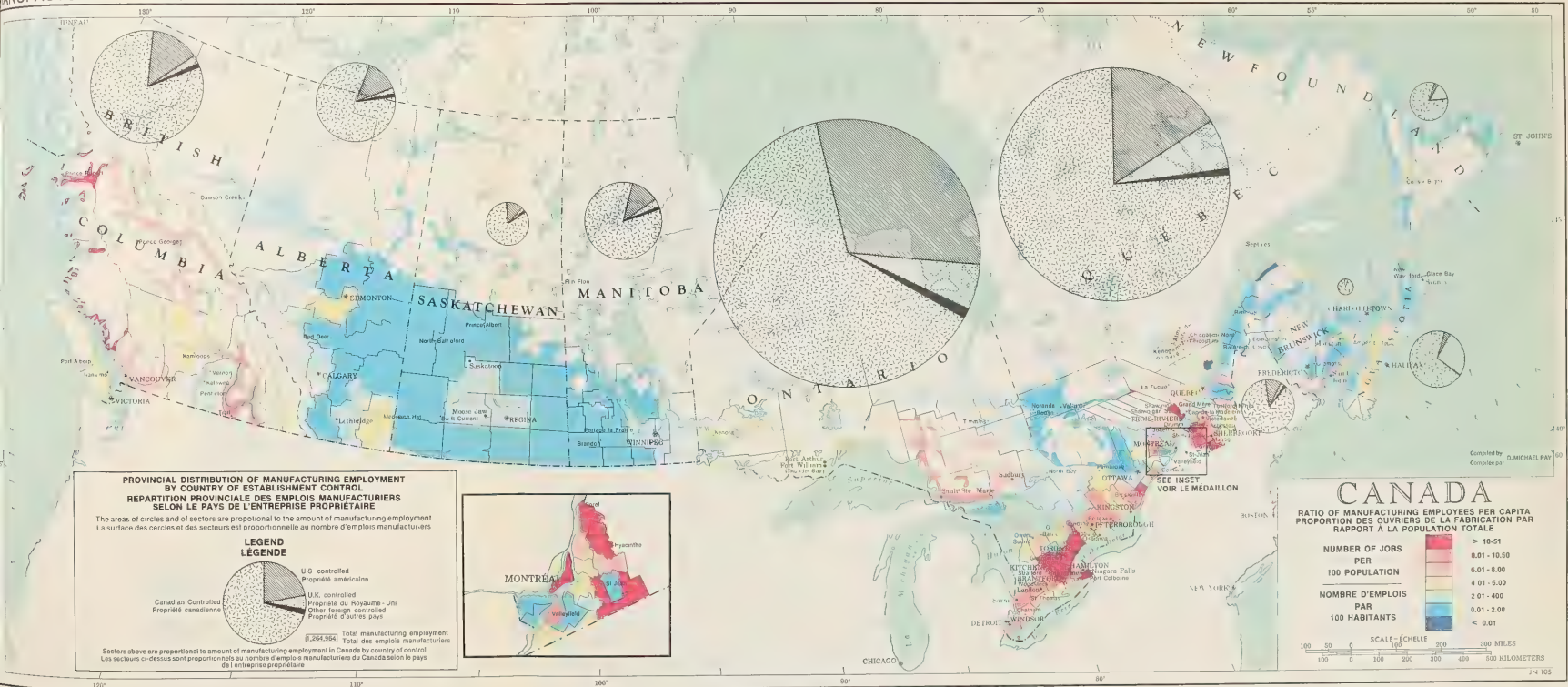


FIGURE 20



FIGURE 21



FIGURE 22

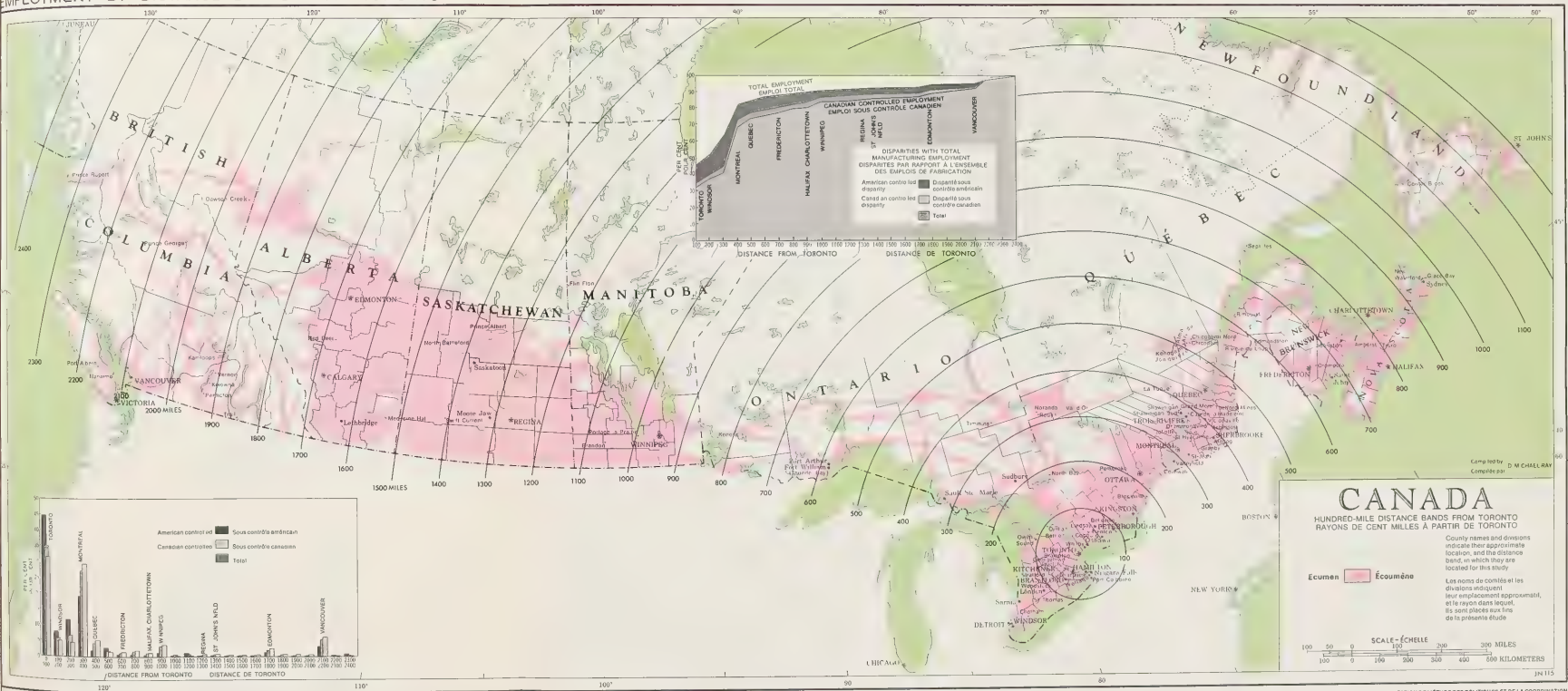


FIGURE 23

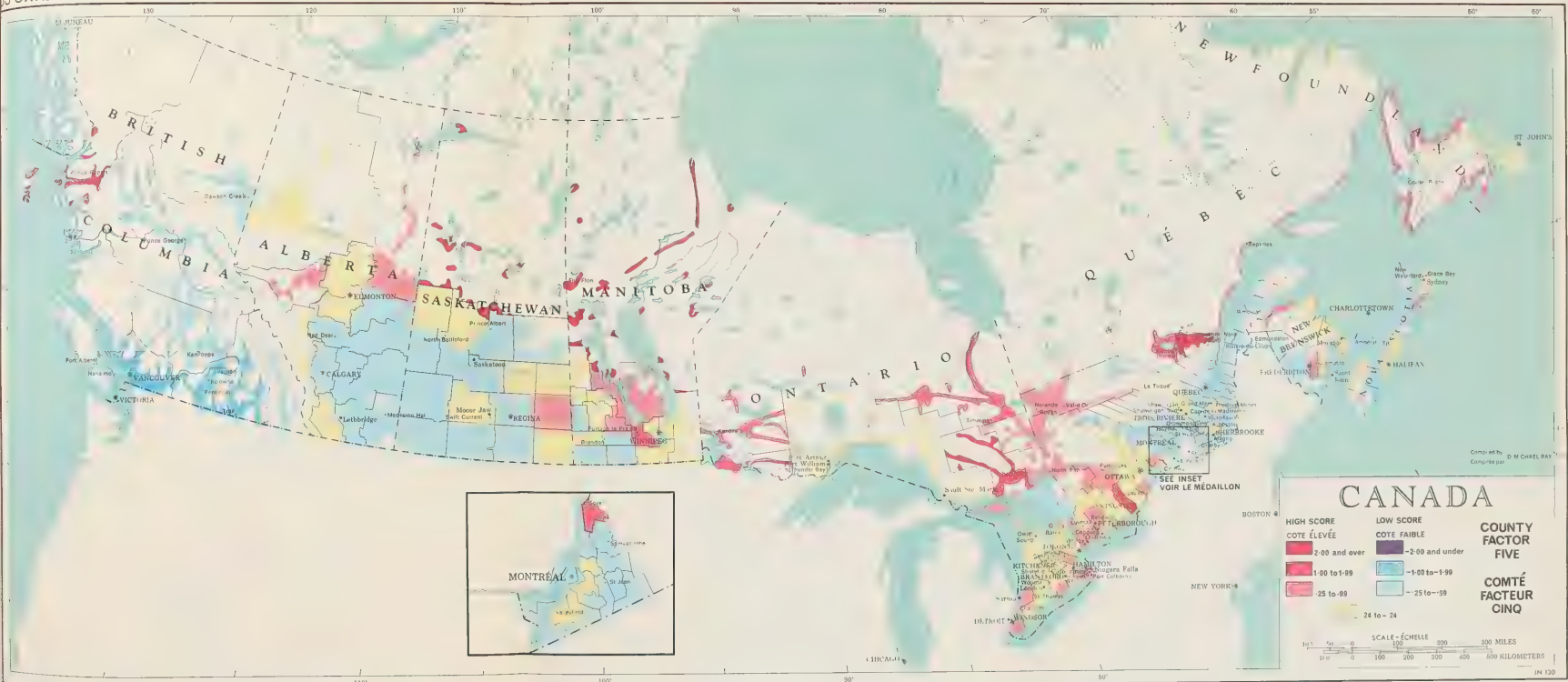


FIGURE 24

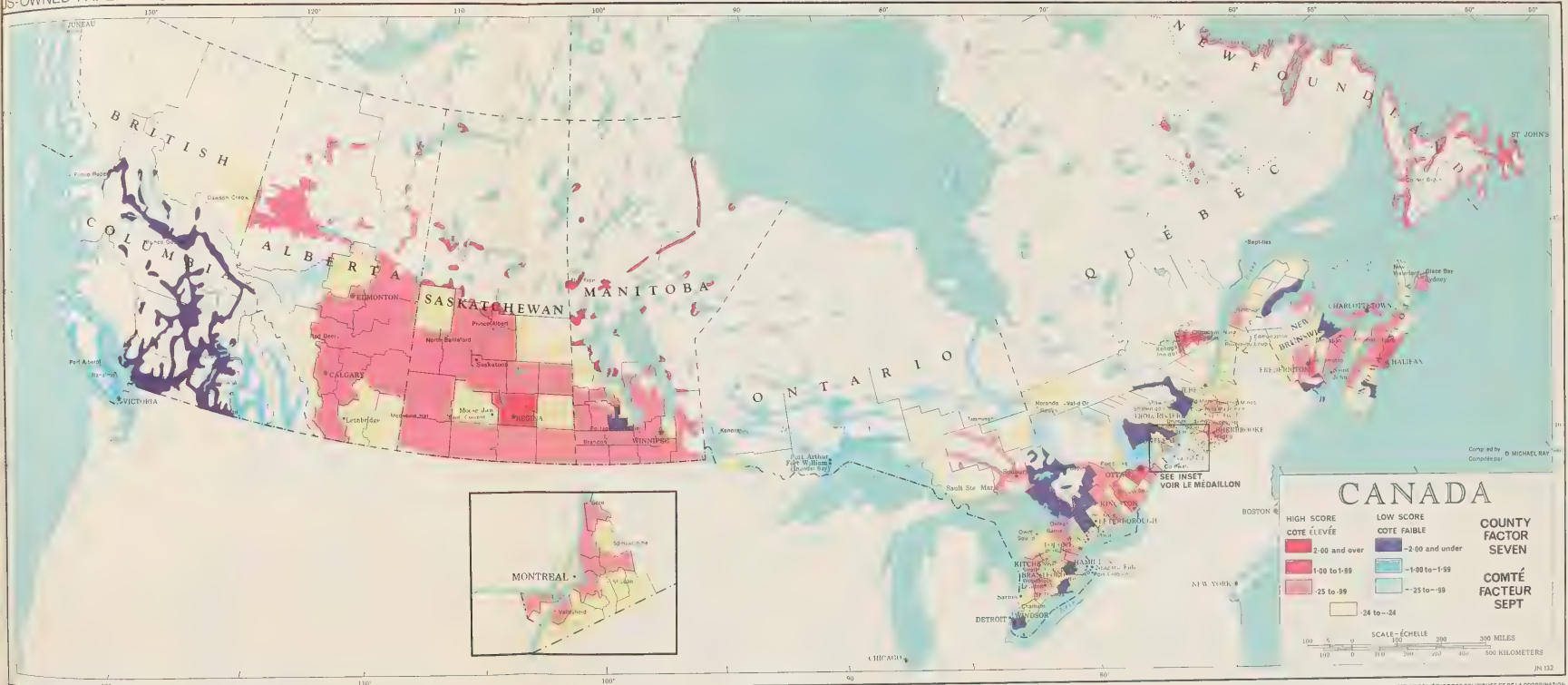


FIGURE 25

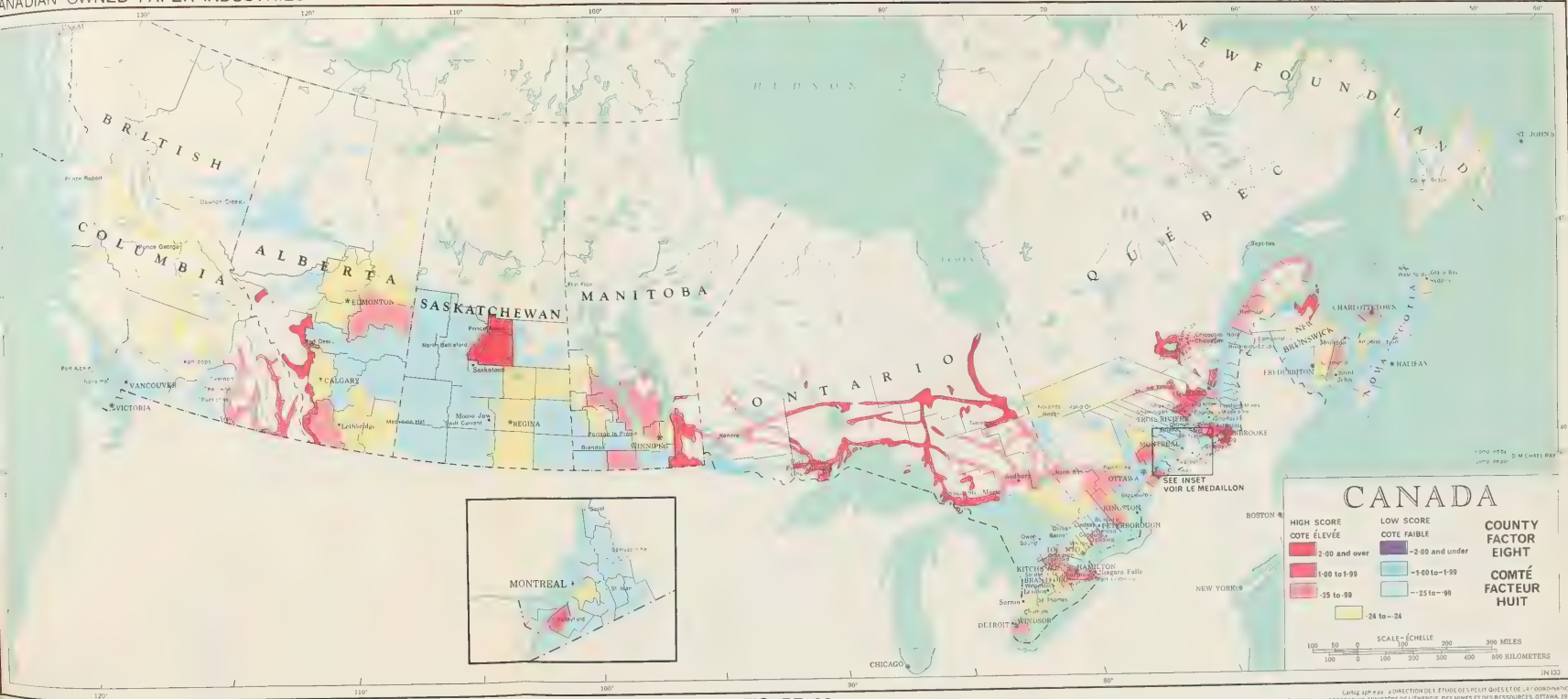


FIGURE 26

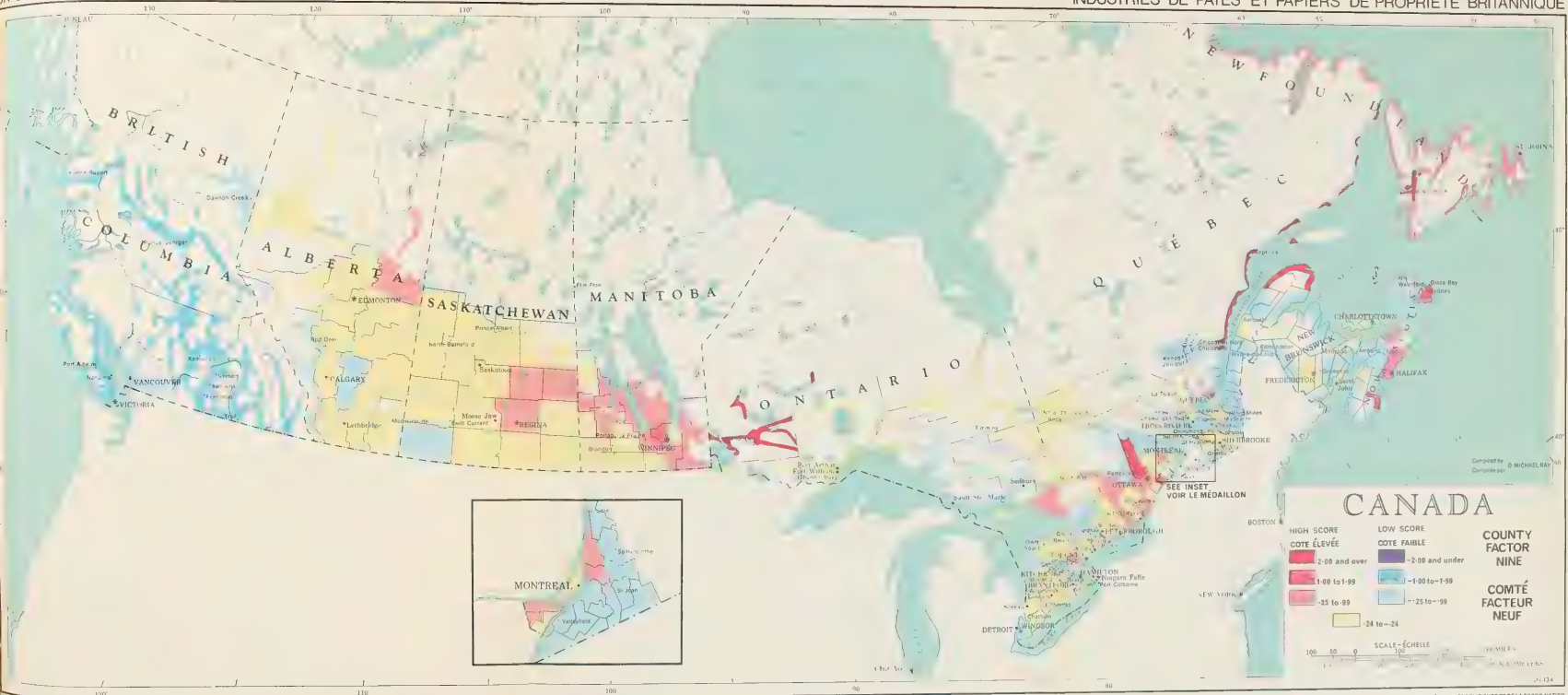


FIGURE 27

187 United States subsidiaries in that city, and are dwarfed by New York SMSA which controls 74 subsidiaries in Montreal. In the cases of New York and several of the eight, Toronto is farther than Montreal and does not constitute an intervening opportunity.

The third element that is apparent from the maps is *spatial momentum* or *sectoral penetration*.² This element states that the distance a parent company penetrates into Canada to locate a branch plant is directly proportional to the distance of the parent company from Canada. The Detroit manufacturer, for instance, can evade the Canadian tariff barrier and the prejudice against foreign products by locating a branch plant across the Detroit River. The marginal benefits of locating closer to the centre of the Canadian market may not compensate for losing the convenience of operating the subsidiary close to the parent company. Consequently, 34 of Detroit's 87 Canadian subsidiaries are located in Windsor where they comprise more than half the Windsor total of United States subsidiaries (Figure 30). Eight of Seattle's 11 Canadian subsidiaries are in Vancouver. Detroit controls only 20 subsidiaries in

Toronto and none in Seattle. By contrast, Los Angeles has half of its subsidiaries in Toronto, but none in Windsor (Figure 30); in general, the proportion of an American SMSA's Canadian subsidiaries located in Toronto increases with increasing distance from the Canadian border.

The three elements described, industrial interactance, sectoral affinity, and spatial momentum, together comprise the *economic-shadow* concept. Economic shadow evaluates the relative inability of regions to supplement locally-owned and controlled industry with externally-controlled branch plants. The foreign component of economic shadow is particularly important for Canada; it could be argued that the same concept applies to the location of manufacturing branch plants of Canadian-controlled enterprises within Canada.

These three elements are combined to form a statistical model of the economic-shadow concept. This model measures the extent to which location decisions expected from the interactance element are influenced by the way industrialists perceive direction and distance (the sectoral-affinity and sectoral-penetration elements).

Table 27
The variables in the economic-shadow model

Dependent variables	
S: Number of United States subsidiaries at the Canadian location with parent companies at the United States location.	
E: Employment in United States-controlled manufacturing establishments at the Canadian location with parent companies at the United States location.	
Independent variables	
D: Distance from the United States location to the Canadian location measured along the great circle.	
P: Retail-sales market potential at the Canadian location.	
W: Number of manufacturing firms at the United States location with more than 50 employers.	
X: Distance of the Canadian Location from the Toronto-United States axis, standardized by the distance from the United States location to Toronto (i.e. United States location to Toronto distance = 1).	
Y: Distance of the Canadian location from United States location measured parallel to the United States-Toronto axis, standardized as above.	
These variables are transformed for the multiple regression analysis to become:	
Dependent variables :	1. $\log S$
	2. $\log E$
Independent variables:	1. $\log D$
	2. $\log P$
	3. $\log W$
	4. $(\log W)/D$
	5. $P \log W$
	6. $(\log P)/D$
	7. $W \log P$
	8. $W \log D$
	9. $P \log D$
	10. $\log D \log P$
	11. $\log D \log W$
	12. $\log P \log W$
	13. X^2
	14. X^2
	15. XY
	16. Y
	17. Y^2

Note: All logarithms are Napierian.

Chapter VI

Economic shadow and the location of United States subsidiaries

The Royal Commission on Canada's Economic Prospects notes:

Many Canadian secondary industries are subsidiaries of American companies and tend, therefore, to be located in regions which are near the parent company and the main industrial centres of the northern United States from which, in many cases, they draw complex parts, technical services or management and supervisory advice.¹

The concentration of parent companies is mapped in Figure 28. Because of the importance of the location of an American company's head office to the location chosen for its Canadian subsidiary, an industrial desire-line map has been drawn connecting, by straight lines, a random sample of manufacturing subsidiaries in Canada with their American head office (Figure 29). Distances from Toronto on these maps are made equal to the square root of the real-earth distance, reducing the map scale from Toronto rapidly, so as to improve the clarity of the desire lines. Two-thirds of all United States subsidiaries are located in southern Ontario and it is not surprising that the pattern, depicted on the map, is dominated by southern Ontario desire lines. More important, spatial regularities can be observed in the pattern of southern Ontario desire lines which persist throughout Canada.

Industrial interactance

An examination of Figure 28, U.S. Location of Parent Companies with Canadian subsidiaries, and Figure 29, Location of U.S. Parent Companies and subsidiaries, and the complete data (Appendix II), suggests that the size of and the distance from United States metropolitan centres affect the number of Canadian subsidiaries which they control. The desire lines from New York and Chicago are dominant. New York controls 307 Canadian subsidiaries; whereas, Boston, much smaller but a little closer to Canada has 48. Chicago and Los Angeles each have about the same number of manufacturing establish-

ments, yet Chicago controls 197 Canadian subsidiaries compared with the more distant Los Angeles which controls only 45. These relationships can be expressed as an interactance model in which the number of manufacturing establishments in a Canadian city controlled by any United States metropolitan area is proportional to the number of manufacturing establishments in that metropolitan area, and inversely proportional to its distance from that metropolitan area.

Because of the contribution of United States subsidiaries to the manufacturing industry in Canada, there are two important corollaries to the interactance model: (1) regional economic development in Canada will tend to reflect the economic health of adjacent regions of the United States; (2) the Canadian regions most likely to acquire a large number of United States subsidiaries are those closest to the American manufacturing belt.

Two additional elements in the location of United States subsidiaries are evident from examination of the maps showing the location of United States subsidiaries (Figures 30 and 31). The stronger of these is *sectoral affinity* which is defined as the tendency of subsidiaries to locate in the geographic sector that links the parent company with Toronto, the point of highest market potential. Consequently, most desire lines appear to radiate from Toronto. Toronto provides the optimal market location for American subsidiaries and few subsidiaries locate beyond it. Industrial interactance between a Canadian city and a United States city is severely restricted wherever Toronto becomes an *intervening opportunity*, eclipsing sectoral affinity.

Compare Montreal with Toronto. Of the 210 Standard Metropolitan Statistical Areas (SMSA's) in the United States with Canadian subsidiaries, only eight control more subsidiaries in Montreal than in Toronto. Seven of these are on the Atlantic Seaboard: Brockton, Fitchburg, New London, Reading, Patterson, Atlantic City and Greensboro. The eighth is Portland, Oregon. These eight control 16 subsidiaries in Montreal out of

The economic-shadow model of establishment location

The economic-shadow model explains much of the intercounty variation in the location of United States-controlled establishments and employment even though it was not possible to test the model for different industry types and aggregate data must be used. The variables used in the model are indicated in Table 27. The measurement of the sectoral affinity and spatial momentum elements is based on an X and Y coordinate system similar to that used for the Toronto-Montreal and New York-Chicago axis in the factor analysis. In the economic-shadow model the United States location is the origin of both shadow variables, with the Y axis passing through Toronto, and the X axis perpendicular to it. The X and Y values are scaled by setting the United States-Toronto distance equal to unity regardless of the actual distance involved. The coordinates of each Canadian city with subsidiaries of parent firms at each United States centre, in this system are computed (Figure 32). The coordinate system assumes, therefore, that both affinity and momentum can be described in terms of the relative location of Toronto to United States and Canadian cities.

The economic-shadow model explains two-thirds of the intercounty variation in the location of United States-controlled establishments. Unfortunately, a complex form of the model is needed to reach this level of explanation and only the X term of all the X , Y coordinates employed, is stable enough to be statistically significant (Table 28). The general form of the shadow model is as expected, and the number of establishments locating beyond Toronto is fewer than would be predicted if the effects of sectoral affinity, and spatial momentum were ignored.

The economic-shadow model of employment distribution

The economic-shadow elements of sectoral affinity and spatial momentum are not important in explaining the distribution of United States-controlled employment in Canada or in any of the regions tested. The model thus reduces to the simple interactance elements. The amount of manufacturing employment in any Canadian census division controlled from a United States metropolitan centre is proportional to the number of manufacturing firms at the United States metropolitan centre, W , and the market potential at the Canadian centre, P , and is inversely proportional to their distance apart, D .

The effect of distance in reducing the amount of employment, termed distance decay, shows important regional variations. Distance decay is very strong in

Quebec and the Atlantic Provinces, weak in Ontario, and takes a modified form in the Prairie Provinces and British Columbia. In the western periphery, the distance decay effect is incorporated in the shadow variable, X , which measures distance from the axis linking the United States centre to Toronto. Generally, employment decreases westwards from Toronto even when allowance is made for differences in market potential (Table 29).

When the model is tested for Canada, the economic characteristics combine in a simple model comprising the interactance variables, P , W , and D , to explain the geographic variations in manufacturing employment controlled from each United States SMSA. Toronto appears to be much less effective as an intervening opportunity for the location of all manufacturing employment than for establishments. This result may mean that United States-controlled employment is concentrated in resource-based primary manufacturing industries.

Nevertheless, the economic-shadow models tested verify the importance of two external factors, the size of United States manufacturing centres, W , and their distance from Canadian centres, D ; each of these factors exerts a major influence on the distribution of United States-controlled employment.

It has now been shown that United States-controlled manufacturing has a distinctly different pattern than Canadian-controlled manufacturing. These differences may reflect, in part, the differences in the industry-types in which United States investment is located. Yet even for the same industries, such as paper and allied industries and the machinery industries, significant locational differences occur. These differences can be attributed to economic shadow and represent the regional impact of foreign investment.

Table 28

Location model for United States-controlled subsidiaries

Regression model:

$$\log S = 1.77$$

$$+ (.873/D + .000017W - .0265 \log D) \log P$$

$$- (.0000076W + .000366P) \log D + .000448 P \log W$$

$$- (.3949X + .1303X^2 + .0891XY + .1129Y)$$

Coefficient of multiple correlation = .82

Variable	<i>t</i> value	Variable	<i>t</i> value
5. $P \log W$	6.01	10. $\log D \log P$	-1.94
6. $(\log P)/D$	1.86	13. X	-3.23
7. $W \log P$	3.31	14. X^2	-1.42
8. $W \log D$	-2.77	15. XY	-.92
9. $P \log D$	-3.26	16. Y	-1.36

Note: The number of observations is 105.

A *t* value of 1.98 is significant.

A *t* value of 2.62 is highly significant.

Table 29

Location model for United States-controlled manufacturing employment

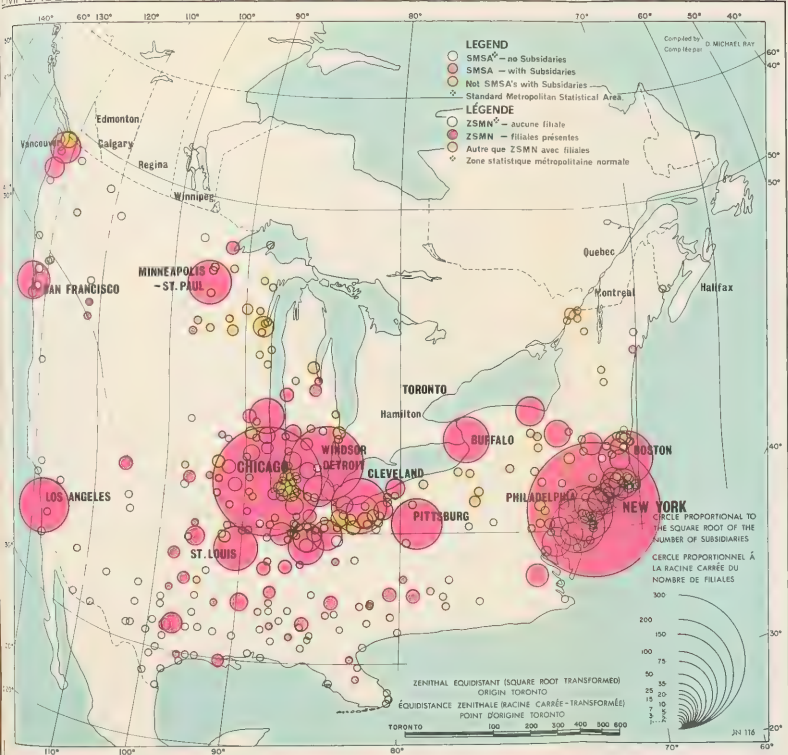
Region	Regression coefficients	t value
Quebec and Atlantic Provinces	$\log E = 11.72$ $-.86 \log D$ $-134.7 \log W/D$ $+94.8 \log P/D$ $-.000,009,9 \log P$ number of observations = 69 coefficient of multiple correlation = .65	 - 1.8 - 4.2 * 4.4 * - 6.1 *
Ontario	$\log E = 6.99$ $-.46 \log D$ $+.032 \log P \log W$ $+.43 XY$ number of observations = 190 coefficient of multiple correlation = .48	 - 4.9 * 6.1 * 1.4
Western Provinces	$\log E = 4.11$ $+.032 \log P \log W$ $+.078 X$ number of observations = 42 coefficient of multiple correlation = .60	 3.8 * 2.9 *
Canada	$\log E = 6.70$ $-.35 \log D$ $+.000,001,8 W \log P$ $+.023 \log P \log W$ number of observations = 301 coefficient of multiple correlation = .48	 - 5.44 * 5.03 * 2.59 *

Note: The distance decay values are given by the coefficient of distance, D . The value changes from .86 for Quebec and the Atlantic Provinces, to .46 for Ontario and has a value of .35 for the country as a whole.

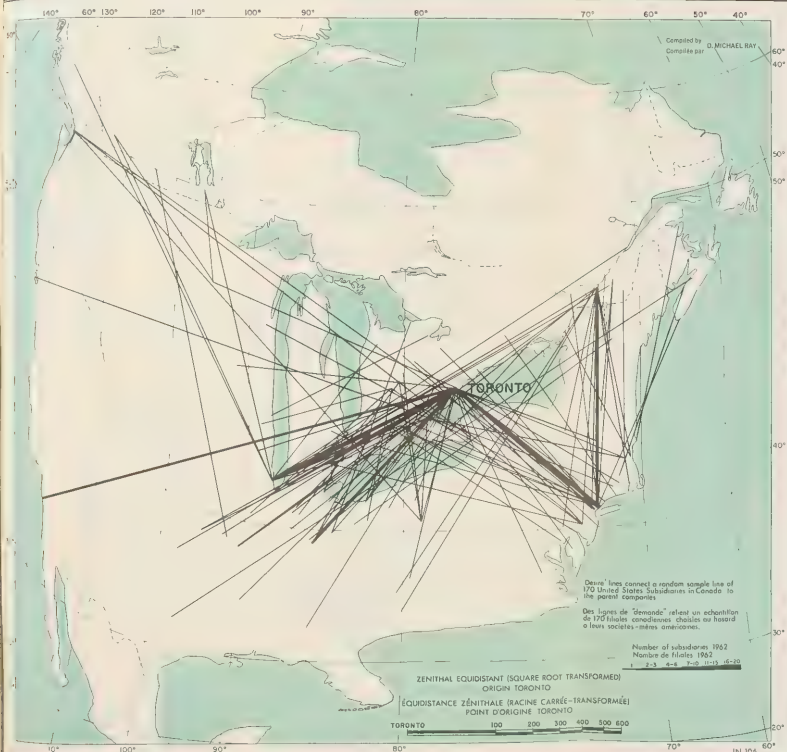
*indicates significance at the .01 level.

LOCATION OF U.S. PARENT COMPANIES WITH CANADIAN SUBSIDIARIES
EMPLACEMENTS DES SOCIÉTÉS AMÉRICAINES POSSÉDANT DES FILIALES AU CANADA

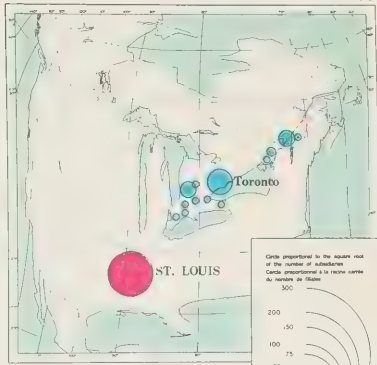
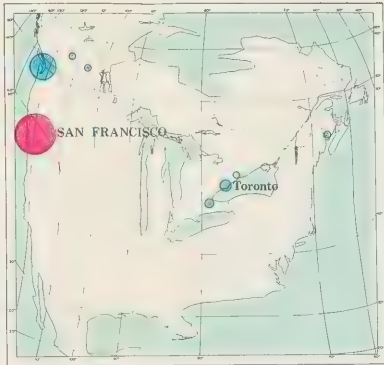
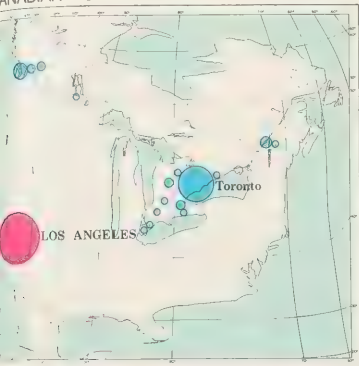
FIGURE 28



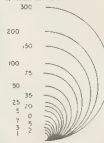
LOCATION OF U.S. PARENT COMPANIES AND SUBSIDIARIES EMPLACEMENT DES SOCIÉTÉS-MÈRES AMÉRICAINES ET DES LEURS FILIALES



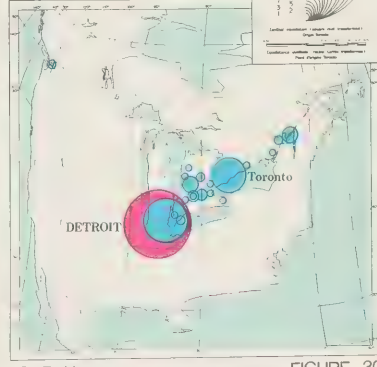
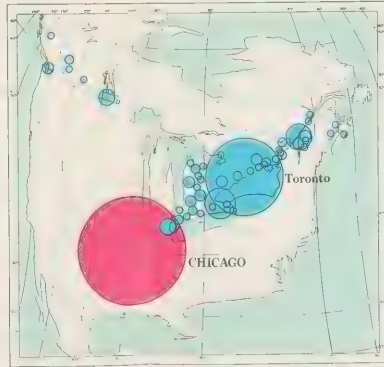
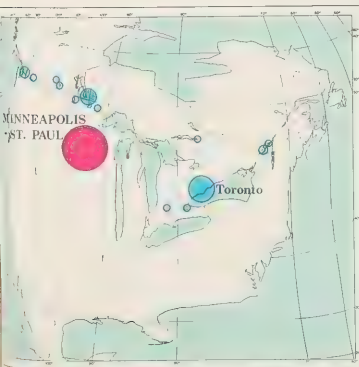
ANADIAN LOCATIONS OF U.S. SUBSIDIARIES FOR SELECTED WESTERN U.S. CITIES



Circle proportional to the square root of the number of subsidiaries
Cercle proportionnel à la racine carrée du nombre de filiales

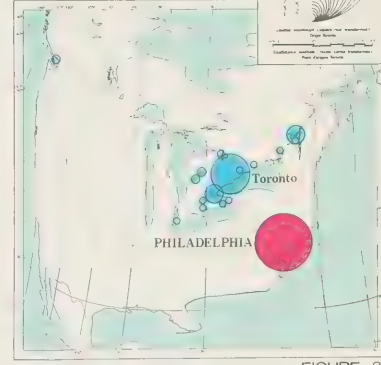
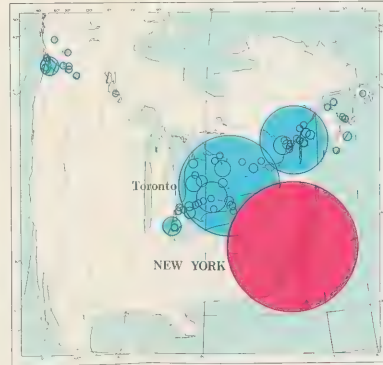
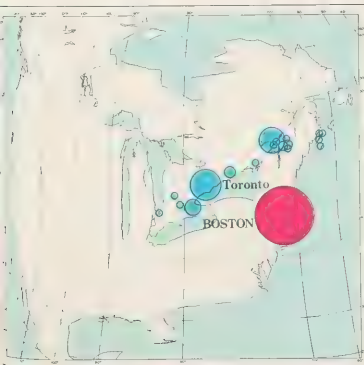
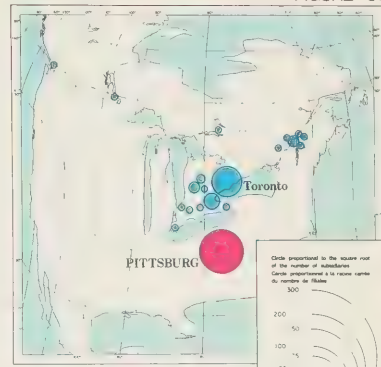
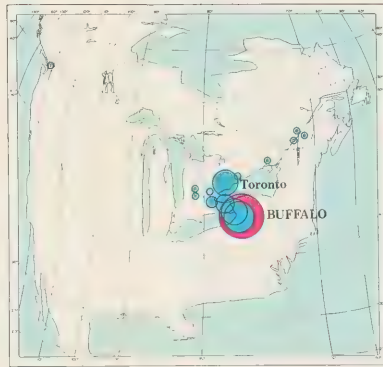
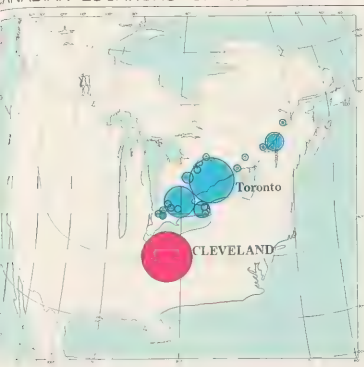


Latitude (coordonnées) - Longitude (coordonnées)
Original Source
Canadian statistics - from U.S. statistics
From English Source



SIÈGES CANADIENS DE FILIALES AMÉRICAINES PAR RAPPORT À CERTAINES VILLES DE L'OUEST DES É.-U.

FIGURE 30
DIRECTION DES POLITIQUES ET DE LA PLANIFICATION, MINISTÈRE DE L'ÉNERGIE, DES MINES ET DES RESSOURCES, OTTAWA, CANADA, 1989



THE X, Y CO-ORDINATE SYSTEM
SYSTÈME DE COORDONNÉES CARTÉSIENNES



FIGURE 32

Chapter VII

The impact of foreign investment on regional development

It is extremely difficult to assess the regional impact of foreign investment. The attempt made in this chapter is restricted to the impact of United States control of manufacturing activity. Three sources of evidences are examined: (1) employment growth from 1949 to 1959 in relation to degree of foreign investment by type of industry; (2) the factor analysis; (3) the economic shadow model.

Industry-mix and regional-share employment growth

In assessing the impact of United States investment on employment growth, it is necessary to consider the industry structure or composition of each county; and moreover, to partition the total employment growth into the amount of growth or decline which can be attributed to the county industrial structure and that which can be related to the location of additional industry there.¹

A county with industry that has rapidly-growing markets can expect faster growth than a county with industries facing national decline. That part of employment growth which can be attributed to the national performance of the industry-types found in a county is termed "industry-mix". Industry-mix is calculated by allocating to each county the proportion of the national change in employment levels for each industry equal to the proportion of the national total found in that county. Industry-mix is thus calculated industry by industry, though only the total for all industry is used in the analysis. Industry-mix is generally positive. Regional share measures the change in industrial location. The calculation is a residual measurement based on the difference between the projected employment change, as indicated by the industry-mix figure, and the actual employment. Regional share may be positive or negative for any county, but when the values are summed for all counties, the total is zero; there is no regional-share for the nation as a whole. Industry-mix and regional-share

employment growth from 1949 to 1959 have been calculated and mapped by county (Figures 33 and 34).

The spatial pattern of industry-mix shows three significant contrasts, an urban-rural, a centre-periphery and an east-west contrast (Table 30). If there were no regional shifts in industry, therefore, employment growth would tend to be greater in urban counties, diminish with distance from Toronto, and increase with distance from Halifax. The spatial patterns are very similar to those of economic status, including income and unemployment (Table 23), although no attempt has been made yet to determine the extent to which income and unemployment in Canada are explained by industry-mix.

Table 30
The spatial distribution of
industry-mix employment growth
in manufacturing in Canada 1949-1959

Independent variable	Regression coefficient	Per cent of variation explained (R^2)
% of population on farms	-11.9**	11.05
Distance from Halifax	4.9**	1.85
Distance from Toronto	-4.3**	1.70
Total		14.60

Note: The independent variables are the same as in Table 26. The independent variables that did not enter are % population rural, and the X and Y coordinates on the two axes, Toronto-Montreal, and New York-Chicago. All variables except industry-mix are log transformed. Double asterisks indicate that all variables entered are significant at the .01 level, even though the total amount of variation explained is extremely low ($r = .38$). The low explanation level is to be expected as many important variables, such as location of raw materials, structure of transportation costs, and innovation and entrepreneurship, are omitted.

The actual pattern of employment growth from 1949 to 1959 shows many deviations from the industry-mix pattern. These deviations, termed regional-share, are influenced by localized factors such as the hydro-electric power developments on the upper and middle St. Maurice River, the development of iron-ore mining in Schefferville, and the major petroleum discovery at Leduc in 1947.² Nevertheless, two systematic patterns are evident in the regional share of growth (Table 31).

Of the variables considered, the proportion of manufacturing employment in United States-controlled primary industry and industry-mix explain a significant proportion of the regional-share employment growth. Ignoring localized factors, United States investment in primary manufacturing emerges as the most important factor and it overrides the Canadian and United Kingdom variables. Unlike total United States-controlled employment, which has significant correlations with market potential, economic disparity and distance from Toronto, United States-controlled primary manufacturing has no such associations and can be expected to be related more closely with primary resources, notably forest and mineral resources.

The negative statistical association between industry-mix and regional share is rather surprising; mathematically the two indexes are independent. The negative association between mix and share indicates that regional disparities in employment growth from 1949 to 1959 were somewhat less than might have been expected given the regional disparities in industry-mix.

Table 31

The spatial distribution of
regional-share employment growth
in manufacturing 1949-1959

Independent variable	Regression coefficient	Per cent of variation explained (R^2)
% of employment in U.S.-controlled primary industry	1.31**	6.07
Industry-mix employment growth	-.79**	2.43
Total		8.50

Note: The independent variables are industry-mix, % of population rural and rural farm, distances from Toronto and Halifax, the X and Y coordinates for the Toronto-Montreal and New York-Chicago axes, and % of manufacturing employment in all establishments, primary manufacturing and machinery cross-tabulated by Canadian, United States, and United Kingdom establishment-control. All variables except regional-share are log transformed. Double asterisks indicate that all variables entered are significant at the .01 level.

The evidence of the factor analysis

Although significant, the percentage of the inter-county variation in employment growth explained by United States-controlled primary industry and industry-mix are very low. Furthermore, the results of the factor analysis do not indicate that foreign investment has had any great regional impact. Intercounty differences in income and occupation structure are ascribed in the factor analysis to urban-rural and to centre-periphery contrasts.

At no point in the factor analysis does income or occupation have strong associations with the United States-controlled manufacturing variables. The sole exception is the United States-controlled ubiquitous-type manufacturing activity. If socio-economic variations in Canada are reduced to two factors, for example, the analysis picks urban-rural and Maritime-Prairie (east-west) contrasts, but does not associate the U.S. variables closely with either (Table 25). The location of United States-controlled employment thus stands out as having a distinctive geographic distribution which is not closely related with any other pattern in Canada. In this sense it is one of the three fundamental patterns discerned by the county factor analysis. All other factors are derivatives of the urban-rural, Maritime-Prairie and United States-controlled manufacturing patterns. The distinctiveness of the geographic distribution of United States-controlled employment is a consequence of economic shadow.

The regional implications of economic shadow

United States control of manufacturing activity in Canada casts an economic shadow over the country in which the number of subsidiaries established in any region is related, in part, to two external factors — the size and the proximity of United States manufacturing centres. The amount of interactance with United States industrial centres tends to decline as distance increases and so the economic impact of United States investment in Canada will reflect the economic health of the contiguous regions in the United States. The concept of economic shadow helps to explain the heavy concentration of United States-controlled subsidiaries in southwestern Ontario, particularly in the Windsor Border and the Niagara Frontier districts, which constitutes extension into Canada of the United States manufacturing belt. The concept also helps to explain the very low level of United States investment in the Atlantic Provinces.

The performance of two of the key elements in the economic-shadow model, sectoral affinity and spatial momentum, is disappointing. It is often difficult to express patterns perceived on the map in mathematical terms and the weakness of these elements in the

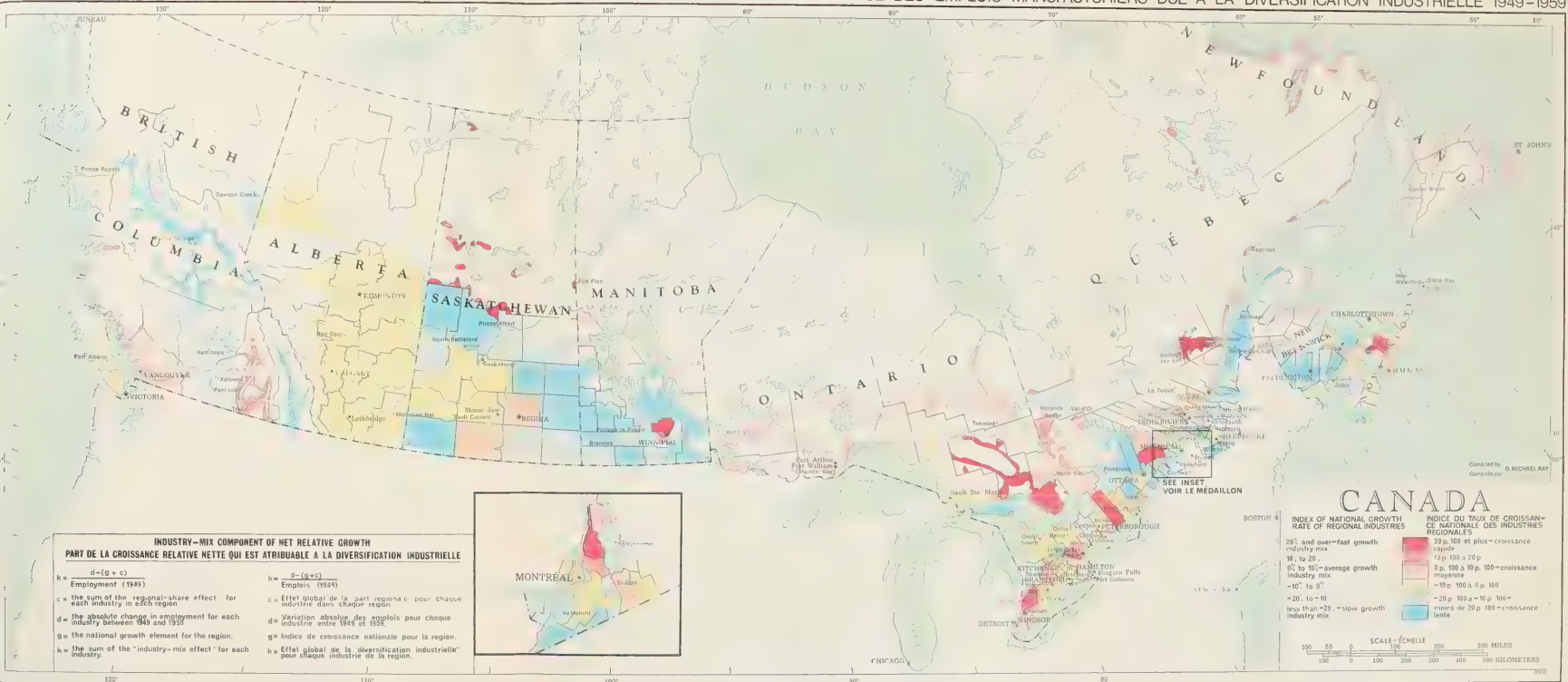
statistical tests may reflect problems with the complex mathematical measures used. The weakness may also result from grouping all manufacturing industry together and ignoring the importance of primary resources in the location of primary manufacturing activity. Nevertheless, the statistical tests of the location of subsidiaries do indicate that United States corporations have a special preference for Toronto and that investment in any Canadian region tends to be reduced whenever Toronto is an intervening location. The small number of subsidiaries in the Atlantic Provinces can be related, in part, to this role of Toronto as an intervening opportunity for mid-west parent companies. Distance decay, which is a measure of the rate at which interaction decreases with increasing distance, is a crucial element in economic shadow. The higher the distance-decay rate, the more localized is the impact of foreign investment and the greater the regional disparities. The distance-decay rates for United States investment in Canada are not high but show very large regional variations. The rates for Quebec and the Atlantic Provinces are together almost double the rate for Ontario. The amount of employment, generated in Quebec and the Atlantic Provinces by United States investment, declines with distance from United States centres at double the rate which it does for Ontario. No specific distance-decay rate emerges for the Western Provinces. This pattern is similar to air passenger traffic which displays a larger volume of traffic movement from the heartland to the western periphery than to the Atlantic periphery. There may exist an east-to-west gradient in general interaction levels and distance decay in Canada that is similar to the gradient of immigration. Immigration is, it should be noted, one measure of interaction between Canada and other countries. This study presents much evidence of the importance of the east-to-west pattern in Canadian

regionalism and the search for the explanation of it may provide basic answers to the problems of regional disparities.

Conclusion

The impact of foreign control of manufacturing industry in Canada on regional development is much smaller than might be expected, given the degree of foreign control of manufacturing in Canada and the evidence that country of control is a significant factor in location. County-level variations in economic status, identified by income, occupation and employment-level characteristics, are largely independent of variations in manufacturing employment classified by type of industry and country of control. The impact of foreign control on regional development patterns in Canada is undoubtedly weakened by the small employment involved. In 1961, only 19 per cent of Canada's labour force was employed in manufacturing and only 23 per cent of the manufacturing labour force was in establishments controlled by United States residents. Regional differences in economic status are closely related to urban and metropolitan growth, but urban and metropolitan growth are not wholly dependent on manufacturing activity.

Nevertheless, the location of United States-controlled manufacturing establishments in Canada has had a significant regional impact in southern Ontario because of their concentration in the Windsor Border, and the Niagara Frontier manufacturing districts, that are adjacent to the United States manufacturing belt. Furthermore, post-war shifts in manufacturing employment across Canada show a significant relationship to the location of United States-controlled establishments in primary manufacturing.



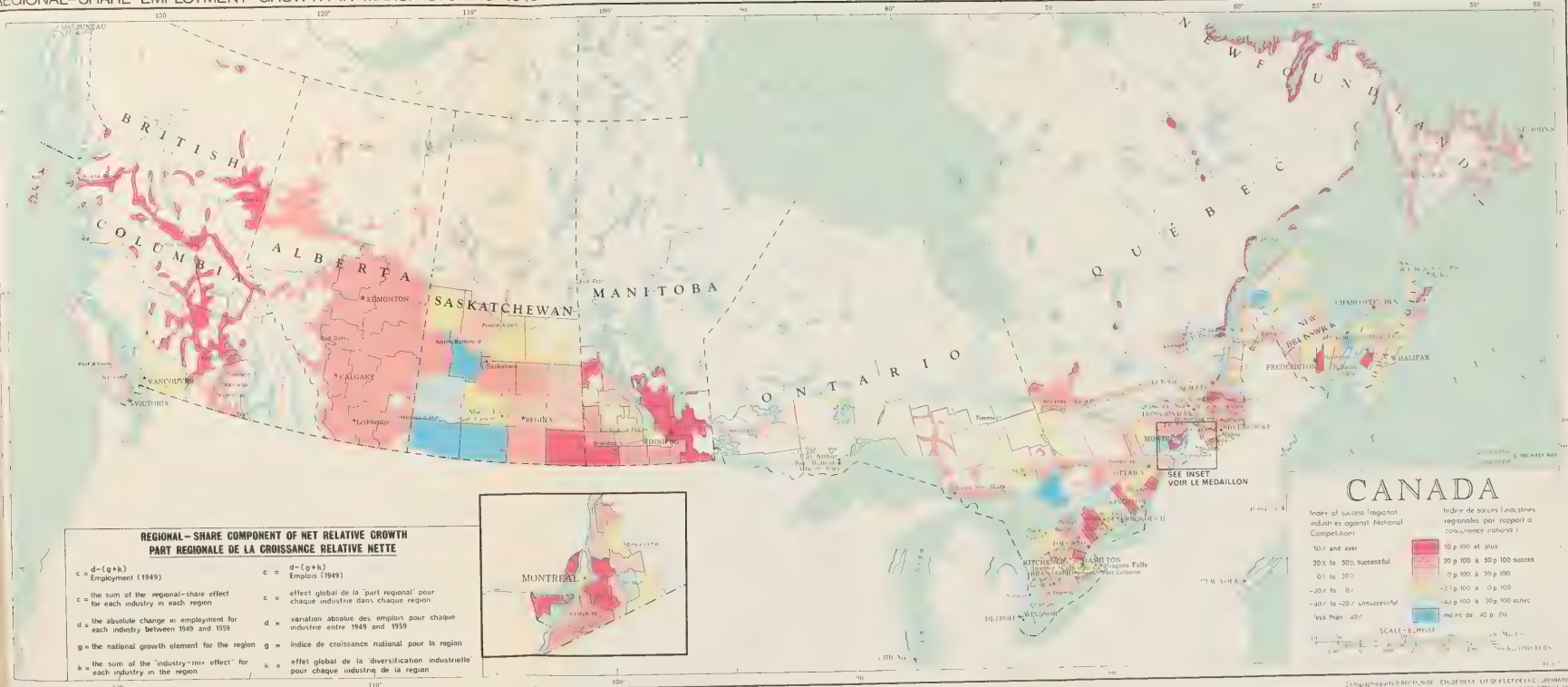


FIGURE 34

Chapter VIII

Policy implications

Canadian regionalism presents a complex mosaic of cultural contrasts and of regional differences in economic development and foreign investment. Although important interrelationships exist between these phenomena cultural contrasts, regional disparities in economic opportunity, and the extent of foreign investment are three separate problems with independent existence. These dimensions of Canadian regionalism exhibit great distinctiveness. Two examples are: (1) cultural contrasts in Canada are not complicated significantly by income-level differences; (2) foreign control of manufacturing industry evidently has not contributed to regional disparities between the Canadian heartland and the peripheral provinces to the extent suggested by preliminary analysis.

Factor analysis, the main technique used in this study, is divisive and replaces a set of characteristics with a number of factors, each one describing a group of closely-associated variables. The order in which the factors emerge and the composition of the factors provide the key to the structure of Canadian regionalism. The first three factors defined describe the socio-economic contrasts, the cultural variations, and the geographic pattern of United States-controlled manufacturing in Canada. These three factors are parent factors in the sense that all other economic, cultural and ownership factors spring from them, and that none of these parent factors adequately describes any of the variables associated with either of the others. Consequently, the order in which the factors are extracted and their composition demonstrate that the differences in the socio-economic, cultural and ownership dimensions of regionalism in Canada override the associations that can be traced among them. These three factors of Canadian regionalism may be summarized separately, therefore, to note the broad implications of the findings for regional policy and planning.

The economic problems of the periphery

Economic characteristics in Canada exhibit significant heart-hinterland, urbanization and development-axis variations. The heartlands of most western countries coincide with their manufacturing belts; Canada's manufacturing belt stretches from Windsor to Quebec City. Many measures of economic status display a heartland-hinterland pattern, including income, employment level and occupation structure. The western Canadian hinterland, or periphery is, perhaps, best interpreted as terminating with the Prairies. The city analysis depicts British Columbia as having its own city system focused on Vancouver. It is noteworthy that if British Columbia is regarded as a separate western system, the areas designated for special assistance under the Funds for Rural Economic Development are all in the most peripheral parts of Canada.

The emergence of heartland-hinterland contrasts as a distinct factor, and an encompassing element of Canadian economic geography implies that sheer distance from the economic and industrial heartland is a potent factor in regional development. Incentive programs, such as those of the former Area Development Agency, should be adjusted to take account of distance from southern Ontario and Quebec if they are to be effective. The centre-periphery factor demonstrates that transportation policy is especially important to regional development; it also lends support to the policies of providing freight-rate subsidies for shipments between the Canadian heartland and the periphery.

Heartland-hinterland contrasts may not be as important, or as persistent as is suggested by the examination of aggregated data for the five major regions over the past forty years. The use of provincial averages to measure regional development ignores intraprovincial differences. The comparison of the Atlantic Provinces with Ontario, takes no account of differences in the

degree of urbanization between them. In 1966 the proportion of the population living in urban centres over 100,000 was only 14 per cent in the Atlantic region compared to 55 per cent in Ontario. When regional disparities are measured at the county level, which is more equitable and meaningful for both regional analysis and policy and planning decisions, it appears that regional disparities have in fact narrowed in Canada since 1931. The comparison of highly urbanized areas with rural provinces can lead to unintentional bias and misleading appraisals.

Urbanization is of more direct significance to regional growth and development than centre-periphery forces. The urban dimensions of regionalism explain far more of the variations in income and employment level than the centre-periphery factor. No clear explanations of the process of urban growth appear in this study; urban growth in Canada shows no simple relationship with urban function, urban size or regional location. Nevertheless, the importance of urbanization in Canada is documented sufficiently to show that it should be of paramount concern in government research, policy and planning.

The analysis presents considerable evidence of the special problems of urbanization in the Atlantic Provinces on the urban-centre-periphery factor, the post-war growth factor and the ethno-metropolitan factor. Urban growth in Canada has always been faster in the heartland than in the periphery. The centre-periphery factor stresses the occupational differences between heartland and hinterland and identifies the cities of the Atlantic region as the most "peripheral" in the country.

Urban counties have generally had faster growth than rural counties, but one of the most prominent differences among Canadian cities is the wide variations in post-World War II growth rates. The growth rates of many Atlantic region cities are among the lowest in the country, although one, Oromocto, with an Armed Forces Base, has had one of the fastest.

Ethno-metropolitan centres may be identified in Canada on the basis of size, special functions, and cultural heterogeneity. No city, or county in the Atlantic region achieves a high score on the ethno-metropolitan factor, in sharp contrast with each of the other four major regions in Canada where one or more centres achieve very high scores. The failure of a major metropolitan centre to emerge in the Atlantic Provinces should be of very serious concern to regional planners, to provincial governments, and to the federal government in view of the role of metropolitan centres in regional growth.

It should be noted that each of these dimensions, the centre-periphery, the urban-growth and the ethno-metropolitan factors, are independent. The poor performance of Atlantic region cities on all three dimensions

underlines the complexity of urban-growth problems in the region. These problems are far more critical to regional growth than rural poverty. Indeed rural poverty is closely related to distance from large urban centres which provide a market for farm produce and offer off-farm employment opportunities.

The results of these analyses indicate that government policies on development, which have been directed toward programs for assisting depressed rural areas and centres of unemployment, should have been directed toward encouraging urban growth in peripheral areas. The analyses point to a much greater need for "Funds for Urban Development" than for "Funds for Rural Economic Development", and for a program to assist the location of manufacturing establishments in peripheral centres on the basis of that centre's growth potential instead of its unemployment level.

The cultural dimensions

The cultural dimensions of regionalism are particularly important in Canada, and each one of Canada's five major regions — British Columbia, the Prairies, Ontario, Quebec, and the Atlantic Provinces — is identified as culturally distinct. Cultural variations in Canada involve the contrasts between the two founding nations, and the existence of large minority groups in areas which are predominantly English speaking.

Two significant regularities may be observed in immigration to Canada, notwithstanding the regional complexities. First, immigrants as a per cent of total population increase with a surprising regularity from Halifax westwards across Canada. Second, immigration since World War II has been to the large urban centres in contrast to the farm and rural orientation of earlier periods.

The analysis suggests that both immigration and internal migration have played a crucial role in the development of regional economies and emergence of regional culture. Immigration and population policies should take account of their impact on any regional development program in Canada. A reduction in regional economic disparities may require a program to reduce regional inequalities in immigration and internal migration rates.

Foreign ownership

This analysis shows that direct capital investment in manufacturing activity in Canada by United States corporations has created externally-related development-axes centred on Toronto, the point of highest market potential in Canada. These externally-related axes are spatially independent of the internal intermetropolitan axes. United States-controlled employment is concentrated in the two manufacturing districts of

southwestern Ontario that are contiguous with the United States manufacturing belt and 45 per cent of United States-controlled manufacturing employment is located within 100 miles of Toronto compared with only 31 per cent of Canadian-controlled manufacturing. This analysis provides no evidence that foreign investment has contributed substantially to heartland-hinterland contrasts; however, it agrees with the results of previous analyses that the location of the parent company is a significant factor in location. The policy implication is that the Atlantic Provinces should strengthen their ties with New England and the Middle Atlantic States if they wish to benefit from greater United States direct capital investment; and with Western Europe if they wish to benefit from the United Kingdom and the European Common Market countries.

Need for continuing research

All research is context bound and it cannot probe far beyond the data available and analyzed. This study has not been able to consider more than three important regional phenomena and it ignores major questions such as the quality of environment resources, primary industries such as fishing, lumbering and farming, and transportation. It should be emphasized that a sound policy of regional development can be prepared only from a comprehensive, integrated program of regional research and analysis. Policy makers in Canada have been greatly handicapped by the lack of such a research and development program, and by the consequent inadequacies of current regional data on social and economic conditions. Such programs, because of the scope of the task involved, can be carried out success-

fully only through the initiative and support of the federal government. Regional research, however, can be greatly facilitated if agencies such as the Dominion Bureau of Statistics make data more readily available. Such a program of comprehensive regional research could make available to policy makers up-to-date information on regional conditions and trends. The regional aspects of federal policy, which are so important in a country as vast and as varied as Canada, could then be thoroughly analyzed and carefully assessed.

A comprehensive research program is required to provide government programs of regional development with an overriding strategy. Regional development programs in Canada have so far lacked a coordinated strategy, have rarely been subject to careful assessment and have been characterized by a concentration on regional problems of the past rather than incorporating a view of the future.¹ As a result there have been frequent changes in the direction and emphasis of programs. The Atlantic Development Board was established in 1962 as an advisory council, broadened in scope in 1963 to finance projects likely to contribute to regional development and reduced to an advisory council again in 1969 before the development program for the region was fully prepared. The Area Development Agency, Funds for Rural Economic Development, and the Agricultural and Rural Development Administration have similarly changed in scope and objectives. The administrative reorganization of these programs under the Department of Regional Expansion is an important step in integrating regional development programs but reorganization is not a substitute for a continuing program of comprehensive analysis on which to base a viable strategy of regional development.

Appendix I **List of variables analyzed**

	City data	County data
ECONOMIC VARIABLES		
Family income: Census Bulletin 4103		
Percentage of families with stated income:	1. \$0 – \$4,000 2. \$4,000 – \$6,000 3. \$6,000 – \$10,000 4. Average family income 5. Median value of owner-occupied dwellings	1. \$0 – \$4,000 2. \$4,000 – \$6,000 3. Average family income 4. Median value of owner-occupied, non-farm dwellings 5. Average monthly gross rent
Education level: Census Bulletin 1210		
Percentage of population not now attending school by level of education:	6. Five years or less of elementary education 7. One or two years of high school education 8. Three to five years of high school education 9. One to four years of university education 10. University degree	6. Four years or less of elementary education 7. Elementary or less 8. One or two years of high school education 9. Three to five years of high school education 10. One year or more of university education
Employment structure: Census Bulletin 3108		
Percentage of male labour force in indicated occupations:	11. Managerial 12. Professional and technical 13. Professional engineers 14. Physical scientists 15. Professors and college principals 16. Physicians and surgeons 17. Law professionals	11. Managerial 12. Professional and technical 13. Farmers, farm workers and stock raisers 14. Loggers, fishermen, wrappers and hunters 15. Miners and quarrymen 16. Craftsmen, production processors and related workers 17. Labourers not previously counted, special tabulation percentage of total county
Manufacturing employment by country of capital control and type of industry: Special tabulation	18. Clerical 19. Sales 20. Service and recreation 21. Transport and communication	18. Total manufacturing employment, 1961 19. United States-controlled establishments 20. United States-controlled primary industries 21. United States-controlled paper and allied industries

	City data	County data
ECONOMIC VARIABLES (cont'd)		
<u>Special tabulation (cont'd)</u>		
	22. Railroad operators	22. United States-controlled metal industry
	23. Road operators	23. United Kingdom-controlled establishments
	24. Farmers and farm workers	24. United Kingdom-controlled primary industries
	25. Loggers and related workers	25. United Kingdom-controlled paper and allied industries
	26. Fishermen	26. United States-controlled large establishments with a book value of \$25 million or more
	27. Miners and quarrymen	27. United States-controlled large primary industries
	28. Craftsmen, production processors and related workers	28. United States-controlled large paper and allied industries
	29. Carpenters, cabinet workers	29. United States-controlled large metal industry
	30. Papermakers and still operators	30. United States-controlled large ubiquitous industry
	31. Machinists and plumbers	31. Canadian-controlled large establishment with a book value of \$25 million or more
	32. Longshoremen and stevedores	32. Canadian-controlled primary industries
	33. Labourers not previously counted	33. Canadian-controlled large paper and allied industries
Employment level: <u>Census Bulletin 3108</u>		
	34. Male labour force as a per cent of males fifteen years or older	34. All males looking for work as a per cent of males fifteen years or older
	35. Male to female labour force ratio	35. Male to female labour force ratio
HOUSING AND PHYSICAL STOCK		
Percentage of dwellings built in indicated period:		
	1. 1921-1945	
	2. 1946-1959	
	3. 1959-1961	
DEMOGRAPHIC VARIABLES		
General population characteristics: <u>Census Bulletins 1202, 1107</u>		
	1. Population density	1. Total population
	2. Per cent of population male	2. Per cent of population rural
	3. Average family size	3. Per cent of population rural farm
		4. Population density
		5. Average family size
Age structure: <u>Census Bulletin 1202</u>		
Percentage of population in indicated age groups:		
	4. 0 - 14	6. 0 - 14
	5. 15 - 19	7. 15 - 29
	6. 20 - 29	8. 30 - 39
	7. 30 - 39	9. 40 - 54
	8. 40 - 54	10. 55 - 64
	9. 55 - 64	11. Dependency ratio = $\frac{(\text{Pop } 0 - 14) + (\text{Pop } 65 +)}{\text{Pop } 15 - 65}$

	City data	County data
Population growth index (calculated as the growth in population between indicated years divided by the average of the population for the two years),	10. 1921 - 1941 11. 1941 - 1961	
CULTURAL VARIABLES		
Official languages and mother tongue	1. Percentage of population bilingual (speaking English and French)	
Percentage of population with indicated mother tongue:	2. English 3. French 4. Asian 5. Scandinavian 6. East European 7. German 8. Dutch 9. Italian 10. Yiddish	1. English 2. French 3. German 4. Indian and Eskimo 5. Italian 6. Polish 7. Ukrainian 8. Yiddish
Percentage of population with indicated religious affiliation: <u>Census Bulletin 2206</u>	11. Roman Catholic 12. Greek Orthodox 13. United Church and related denominations 14. Baptist 15. Lutheran	
Percentage of population according to place of birth: <u>Census Bulletin 1207</u>	16. Atlantic Provinces 17. Quebec 18. Ontario 19. Prairie Provinces 20. British Columbia 21. United Kingdom 22. United States 23. Germany 24. Italy 25. Scandinavia 26. East Europe 27. Asia	9. Newfoundland 10. Maritime Provinces 11. Quebec 12. Ontario 13. Prairie Provinces 14. British Columbia 15. United Kingdom 16. United States 17. Germany 18. Italy
Immigration: <u>Census Bulletin 1208</u>		
Percentage of population that is foreign born by period of immigration:	28. 1921 - 1940 29. 1941 - 1950 30. 1951 - 1961 31. Percentage of population foreign born 32. Percentage of immigrants that are male	19. pre - 1931 20. 1941 - 1961 21. Percentage of population foreign born
SPATIAL LOCATORS		
<u>Special tabulations</u>	1. Distance from Toronto 2. Distance from Vancouver	1. Great-circle distance from Toronto 2. Distance from Toronto parallel to Toronto-Montreal axis

	City data	County data
CULTURAL VARIABLES (cont'd)		
Census Bulletin 2206 (cont'd)	3. Number of air flights per day on week days	3. Perpendicular distance from Toronto-Montreal axis 4. Distance from New York parallel to New York-Chicago axis 5. Perpendicular distance from the New York-Chicago axis 6. Market potential 1931 7. Market potential 1961 8. Economic disparity 1931 9. Economic disparity 1961
TOTAL ALL VARIABLES:	84	76

Note: 1. For detailed census definitions see the 1961 Census of Canada Bulletins (Ottawa: DBS).

2. For definitions of manufacturing industries by SIC codes see *The Standard Industrial Classification Manual* (Ottawa: DBS, 1960)

(a) Primary manufacturing industries: SIC 101, 103, 105, 107, 111, 112, 123, 124, 125, 133, 147, 151, 251, 271, 295, 341, 351, 357, 372 and 373.

(b) Paper and allied industries (major group 10): SIC 271-274.

(c) Metal industries (major group 13): SIC 301-309.

(d) Ubiquitous secondary industries: SIC 128, 129, 131, 139, 141, 145, 254, 273, 286, 287, 288, 289.

Appendix II

Canadian location of U.S. subsidiaries by metropolitan location of U.S. head office

[illegible]

POLICY RESEARCH AND COORDINATION BRANCH

[illegible]

NFLD.	NOVA SCOTIA		NEW BRUNSWICK		QUEBEC								MAN.	ALBERTA		BRITISH COLUMBIA		PAGE TOTALS	S.M.S.A.	
000109	200302	220801	311101	301400	460601	421601	452000	474800	435502	456200	466600	446700	446701	602004	830600	861100	940405	950500		
ST. JOHN'S	SYDNEY - GLACE BAY	HALIFAX	SAINT JOHN	MONCTON	VALLEYFIELD	CHICOUTIMI - JONQUIERE	DRUMMONDVILLE	MONTREAL	QUEBEC	SHERBROOKE	ST-JEAN	SHAWINIGAN	TROIS-RIVIERES	WINNIPEG	CALGARY	EDMONTON	VANCOUVER	VICTORIA		

POLICY RESEARCH AND COORDINATION BRANCH

ONTARIO														OTHERS	PAGE TOTAL	ROW TOTALS	S.M.S.A.
580100	580200	580400	580506	581000	581100	582200	582600	582800	583300	583800	584600	584700	585001	585200	585300	585400	<div> PAGE <div> 12 3 56 </div> </div>
SAULT STE. MARIE	BRANTFORD	OTTAWA	TIMMINS	WINDSOR	KINGSTON	SARNIA	ST. CATHARINES	LONDON	OSHAWA	PETERBOROUGH	SUDBURY	FORT WILLIAM - PORT ARTHUR	KITCHENER	GUELPH	HAMILTON	TORONTO	
																3	ATLANTA, GA. 011115
															1	4	INDIANAPOLIS, IND. 081153
								1								1	JACKSON, MICH. 082233
																	JACKSONVILLE, FLA. 084105
1																5	JERSEY CITY, N.J. 085312
				1											1	2	KALAMAZOO, MICH. 087233
															1	3	KANSAS CITY, MO. 088264
																2	KENOSHA, WISC. 089503
				1												4	LANCASTER, PA. 092392
																2	LANSING, MICH. 093233
																1	LAWRENCE, MASS. 096221
																1	LEXINGTON, KY. 099186
				1												1	LIMA, OHIO 100363
										1							LITTLE ROCK, ARK. 102047
																3	LORAIN, OHIO 103363
								1	1					2	2	21	LOS ANGELES, CAL. 104059
																1	LOUISVILLE, KY. 105186
																1	MADISON, WISC. 110503
				1											1	1	MEMPHIS, TENN. 112436
				1												1	MERIDEN, CONN. 113071
2				1					1				1	1		9	MILWAUKEE, WISC. 116053
								1							1	11	MINNEAPOLIS - ST. PAUL, MINN. 117244
																1	MUSKEGON, MICH. 122233
																1	NASHVILLE, TENN. 123436
															1		NEWBEDFORD, MASS. 124221
															2	2	NEW BRITAIN, CONN. 125071
										1						1	NEW HAVEN, CONN. 126071
															1	1	NEW LONDON - GROTON, CONN. 127071
																1	NEW ORLEANS, LA. 128197
1	5			4		1	2	2		1			6	3	14	125	NEW YORK, N.Y. 129332
								1					1		1	22	NEWARK, N.J. 130312
																3	NORWALK, CONN. 133071
																	OKLAHOMA CITY, OKLA. 136377
															1	1	OMAHA, NEB. 137284
															1		ORLANDO, FLA. 138105
		1							1	1			1		1	2	PATERSON, N.J. 139312
																1	PEORIA, ILL. 141143
1				1			1						2	2	6	21	PHILADELPHIA, PA. 142392
1							1	1					2	2	5	13	PITTSBURGH, PA. 144392
																1	PORTLAND, ME. 146201
														1			PORTLAND, ORE. 147389
6	6			11		1	4	7	3	4			13	11	37	267	PAGE TOTALS

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POLICY RESEARCH AND COORDINATION BRANCH

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Appendix III

Foreign ownership data

Manufacturing employment data examined in Chapters V, VI, and VII, are derived from the 1961 Dominion Bureau of Statistics Joint Foreign-owned Capital Project. This project entailed a survey of the manufacturing operations of foreign-controlled enterprises. The findings were published in *The Canadian balance of international payments, 1963, 1964, and 1965*, and the *International investment position* (DBS Catalogue 67-201). The information published in this report cross-tabulated data relating to foreign-controlled Canadian enterprises with an aggregate investment in Canada of one million dollars or more at the end of 1960 with the Census of Manufactures for 1961.

The survey was the latest in a series of three which was commenced in 1949 when the Bureau published a special report on important United States direct investment in Canada, including statistics of their manufacturing operations. This was followed by a similar study covering the year 1953.* The 1961 survey was more ambitious than either of the earlier ones. In addition to data relating to selected enterprises controlled in the United States, it provided details of the manufacturing operations of selected enterprises controlled in the United States, in the United Kingdom, and in other foreign countries. For the first time too, it was possible to provide some information about the manufacturing activities of enterprises classified according to the size of their aggregate investment in Canada. This made possible, inter alia, the inclusion of details of Canadian-controlled enterprises with an aggregate investment in Canada of more than \$25 million. **Thus, it was possible for the first time to compare the manufacturing operations of Canadian-controlled enterprises with foreign-controlled enterprises of an equivalent capital size.

*The first report, relating to the year 1946, was published in 1949 as *U.S. direct investments in Canada: statistics of investments in all companies and operations of the larger manufacturing companies*. This report is now out of print. Details of the 1953 study were published in *Canada's international investment position, 1926-1954* with supplementary information being included in *The Canadian balance of international payments, 1955*, and *International investment position*.

**For practical reasons, it has not been possible to provide information relating to the Canadian-controlled enterprises with an aggregate investment of \$25 million or less.

The concept of control used in the survey conforms with that used in all official Canadian statistics on international investment (and corresponds generally with the concept of direct investment recommended by the International Monetary Fund). In general, an enterprise is considered to be foreign controlled if 50 per cent or more of its voting stock is known to be held in one country outside Canada. The group is modified by the addition or deletion, as appropriate, of concerns where it is believed that because of the distribution of stock, effective control is held with less than 50 per cent of the voting stock. Since complete knowledge of the shareowners may not be available, the classification of borderline cases involve a measure of judgment based upon all the known factors which could be relevant. The enterprise includes all the corporations over which the group itself is in a position to exercise control. *The concept of control which has been adopted is, therefore, one of potential control through stock ownership, and the degree, if any, of local autonomy permitted in practice by the owner is not relevant.*

Under the DBS definition, foreign-controlled enterprises range from unincorporated branches of foreign corporations operating in Canada, through wholly- or partially-owned Canadian subsidiaries of foreign corporations, to Canadian private or public companies which have no parent concern but whose stock ownership is held substantially in a country outside Canada.

In the present study, Canadian companies whose voting stock is held substantially by non-residents but which have no parent companies have been treated as Canadian-controlled. Additionally, some international corporations whose operations are allocated to several areas in the DBS report are, in this study, allocated to one area only. As a result, there are minor discrepancies between the provincial aggregates of foreign-controlled employment presented in this study and those published by DBS. These discrepancies do not affect the geographic pattern of distribution and concentration of foreign-controlled employment, or the conclusions of the study.

The analysis of the location of United States-controlled manufacturing subsidiaries uses both the DBS Joint Foreign-owned Capital Project data, described above, and a 1962 listing, *American firms, subsidiaries and affiliates*, supplied by the Bureau of International Commerce of the United States Department of Commerce. This listing gives the names and addresses of the United States head offices and their Canadian subsidiaries.

The U.S. Department of Commerce listing is not strictly comparable with the DBS data. Their definition of direct foreign investment is extended to include "all those foreign business enterprises in which a United States resident person, organization, or affiliated group, owned a 25 per cent interest, either in the voting stock of a foreign corporation, or an

equivalent ownership in a non-incorporated foreign enterprise...”* In a few important instances, foreign companies were included as direct investments, although the United States stock ownership was slightly less than 25 per cent but where strong management relationships were known to exist. Publicly-owned foreign corporations, 50 per cent or more of whose stock was owned in the United States, were included even when there was no single controlling United States interest.

A second important difference between the data is that DBS identifies all manufacturing establishments that are foreign-controlled, and codes the enterprise to which they belong. The United States list indicates only the company, which is the intermediate level of corporate organization as there may

be several manufacturing establishments run by a single company, and several companies in a single enterprise. The United States list includes some 1,681 subsidiaries in Canada, compared with the DBS figure of 476 United States-controlled enterprises with 1,106 manufacturing establishments. A check of the data against DBS records revealed a small number of discrepancies, errors and omissions and suggests the data should be used with caution.

The addresses of the United States parent companies have been coded into the DBS data and both these data and the United States listing have been cross-tabulated to determine the number of foreign-controlled subsidiaries, and employment in each Canadian census division with head offices in each American Standard Metropolitan Statistical Area. These tabulations and much of the analysis were undertaken when the author was special advisor in regional statistics at the Dominion Bureau of Statistics.

*U.S. Department of Commerce, *U.S. business investments in foreign countries, 1960*, p. 76.

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¹Other aspects of this research are presented in D. Michael Ray and Robert A. Murdie, "Comparison of Canadian and American urban dimensions," in Brian J.L. Berry, ed., *Classification of cities: new methods and evolving uses*, The International City Managers Association, Washington, 1971; and D. Michael Ray, *The spatial structure of economic and cultural differences: a factorial ecology of Canada*, Papers and Proceedings of the Regional Science Association, vol. 23, 1969, pp. 7-23.

²S.E. Chernick, *Interregional disparities in income*, Economic Council of Canada, Ottawa, Staff Study No. 14, August 1966; Frank T. Denton, *An analysis of interregional differences in manpower utilization and earnings*, Economic Council of Canada, Ottawa, Staff Study No. 15, April 1966; Economic Council of Canada, *Towards sustained and balanced growth*, Economic Council of Canada, Ottawa, December 1965, pp. 97-141.

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⁷*Ibid.*

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¹⁰See particularly Warkentin, *op. cit.*, Robert M. Irving, ed., *Readings in Canadian geography*, Holt, Rinehart and Winston, Toronto, 1968, and T.N. Brewis, *Regional economic policies in Canada*, Macmillan, Toronto, 1969. Regional overviews are presented in these volumes by Merrill, *op. cit.*, pp. 556-568, Andrew M. Clark, "Geographic diversity and the personality of Canada," in Irving, *op. cit.*, pp. 3-16, and F. Kenneth Hare, "Canada," in Warkentin, *op. cit.*, pp. 3-12.

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¹Canada, Royal Commission on Bilingualism and Biculturalism, *General introduction: book I, the official languages*, Queen's Printer, Ottawa, 1967, p.xxxi.

²Canada, Royal Commission on Bilingualism and Biculturalism, *op. cit.*, p. 21. Ethnic origin is determined in Canada by the ethnic or cultural group that a person, or his ancestor on the male side, belonged to on coming to North America.

³Canada, Royal Commission on Bilingualism and Biculturalism, *op. cit.*, p. 23.

⁴*Ibid.*, pp. 32-37.

⁵*Ibid.*, p. 19.

⁶See J. Howard Richards, "The Prairie region," in Warkentin, *op. cit.*, pp. 396-437.

⁷*Ibid.*, p. 411.

⁸Anderson, *op. cit.*, p. 9.

⁹Louis-Edmond Hamelin, "Types of Canadian ecumene," in Irving, ed., *op. cit.*, pp. 20-29.

¹⁰Gunnar Olsson, *Distance and human interaction*, Regional Science Research Institute, Philadelphia, 1965.

¹¹J. Lewis Robinson and W.G. Hardwick, "The Canadian cordillera," in Warkentin, *op. cit.*, pp. 438-472.

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²Chernick, *op. cit.*, pp. 5-15; Brewis, *op. cit.*, pp. 84-87.

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- ⁹J.R. Lasuen, *Regional income inequalities and the problems of growth in Spain*, Papers and Proceedings of the Regional Science Association, European Congress, VIII, 1962, pp. 169-191.
- ¹⁰Chauncy D. Harris, *The market as a factor in the location of industry in the United States*, Annals of the Association of American Geographers, XLIV, December 1954, pp. 315-348, and T. Nicholas Tideman, *The theoretical efficacy of 'potential' and transport cost models of location*, Center for Urban Studies, Univ. Chicago, Chicago, 1968.
- ¹¹These are the four cities recognized as metropolitan centres by Maxwell. See James W. Maxwell, *The functional structure of Canadian cities: a classification of cities*, Geographical Bulletin, VII, 1965, pp. 79-104.
- ¹²Poetschke, *op. cit.*, p. 1.
- ¹³The scores for the counties on each factor were grouped into seven distance bands beginning with a short distance band including all counties within 50 miles of Toronto. Successive distance bands become progressively wider and the final distance band includes all counties more than 1,600 miles from Toronto (Table 12). The problem is to determine if the differences in the averages between the distance bands represent random variations or whether they are statistically significant. Analysis of the variations in the scores between and within each distance band, using analysis of variance, provides an *F* test which measures the significance level.
$$(F \text{ Test} = \frac{\text{within variation}}{\text{between variation}}).$$
Factors for which the distance band grouping produces significant *F* levels, are indicated by asterisks in Table 12.
- ⁴Donald P. Kerr, "Metropolitan dominance in Canada," in Warkentin, *op. cit.*, pp. 531-555.
- ⁵John Friedmann and John Miller, *The urban field*, J. Am. Inst. of Planners, XXXI, November 1965, pp. 312-319; Brian J.L. Berry, *Metropolitan area definition: a re-evaluation of concept and statistical practice*, U.S. Bureau of the Census, Washington, D.C., Working Paper No. 28, 1968, and Allan R. Pred, *The spatial dynamics of U.S. urban-industrial growth, 1800-1919*, M.I.T. Press, Cambridge, Mass., pp. 12-85.
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- ⁷Ray and Murdie, *op. cit.*
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- ⁹John Friedmann and William Alonso, eds., *Regional development and planning*, M.I.T. Press, Cambridge, Mass., 1964, p. 3.
- ¹⁰Olsson, *op. cit.*; J. Ross Mackay, *The interactance hypothesis and boundaries in Canada*, Canadian Geographer, No. 11, 1958, pp. 1-8; Ray, 1965, *op. cit.*, pp. 89-110, and Roy I. Wolfe, "Economic development," in Warkentin, *op. cit.*, pp. 226-227.
- ¹¹Kerr, *op. cit.*, p. 546.
- ¹²Wolfe, *op. cit.*, pp. 214-215.
- ¹³Economic Council of Canada, 1967, *op. cit.*, p. 186.
- ⁴*Ibid.*, p. 187.

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- ¹Watkins, et al., *op. cit.*, p. 1. An enterprise is generally considered to be foreign-controlled if 50 per cent or more of its voting stock is known to be held in one country outside Canada. See Appendix III.
- ²These problems are analyzed in Watkins, *op. cit.*, pp. 22-362.
- ³Efforts to examine this problem include: Hugh G.J. Aitken, *American capital and Canadian resources*, Harvard Univ. Press, Cambridge, Mass., 1961; Aitken, et al., *op. cit.*; Brewis, *op. cit.*, pp. 40-42; Harry G. Johnson, *The Canadian quandary: economic problems and policies*, McGraw-Hill, Toronto, 1963, and Ray, 1965, *op. cit.*
- ⁴C. Langdon White, Edwin J. Foscoe and Tom L. McKnight, *Regional geography of Anglo-America*, Prentice-Hall, Englewood Cliffs, N.J., 1964, pp. 32-54; Brewis, *op. cit.*, pp. 15-18.
- ⁵These tabulations were made from a 1962 listing entitled *American firms, subsidiaries and affiliates in Canada*, supplied by the Bureau of Internal Commerce of the United States Department of Commerce. No adjustments were made in these tabulations although a check with DBS records indicates some minor errors and omissions. See Appendix III for an explanation of data on foreign control.
- ⁶Canada, Dominion Bureau of Statistics (DBS), *International investment position: 1926-1954*, Queen's Printer, Ottawa, 1958; Canada, DBS, *The Canadian balance of international*

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- ¹Economic Council of Canada, *The Canadian economy from the 1960's to the 1970's*, Economic Council of Canada, Ottawa, 1967, p. 173.
- ²*Ibid.*, p. 177.
- ³*Ibid.*, p. 180.

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¹D.H. Fullerton and H.A. Hampson, *Canadian secondary manufacturing industry*, Royal Commission on Canada's Economic prospects, Ottawa, 1957, p. 46.

²Roy Wolfe finds that spatial momentum occurs in the recreation travel behaviour of American tourists in Ontario. See R.I. Wolfe, *Parameters of recreation travel behaviour in Ontario*, Ontario Dept. Highways, Toronto, 1966. Wolfe compares this momentum in recreation travel behaviour to sectoral penetration in plant location. See Roy I. Wolfe, "Economic development," in Warkentin, *op. cit.*, pp. 226-227.

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²Pierre Biays, "Southern Quebec," in Warkentin, *op.cit.*, pp. 309-313, and J. Howard Richards, "The Prairie region", in Warkentin, *op. cit.*, p. 430.

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¹T.N. Brewis, *Regional developments – the Canadian experience*, a report prepared in 1969 under the auspices of Ressources for the Future Inc., for the United Nations.

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